

**2008 3<sup>rd</sup> QUARTER GROUNDWATER AND SVE  
MONITORING REPORT**

**FORMER ANGELES CHEMICAL COMPANY FACILITY  
8915 SORENSEN AVENUE, SANTA FE SPRINGS, CA.**

Prepared for and submitted to:

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**NOVEMBER 2008**

## **2008 3rd QUARTER GROUNDWATER MONITORING REPORT**

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**ABSTRACT**

Twenty-one groundwater-monitoring wells were gauged and fifteen wells were sampled for laboratory analysis at the former Angeles Chemical Company (ACC), Inc. facility, located at 8915 Sorensen Avenue, Santa Fe Springs, California, on September 18, 2008. The carbon-based SVE system was turned on for all 93 days of the quarter. With the exception of MW-12 (which rose 0.60 feet), groundwater elevations dropped in all other first water monitoring wells (MW-8, -9, -10, -11, -12, -16, -18, and -19) an average of 2.11 feet. First water wells MW-4, -6, and -26 were found to have no water in them, MW-22 did not have enough groundwater in it to obtain a sample, and MW-18 and -19 have product sheens in them (and so were not sampled). The pattern created by contouring groundwater data (see **Figure 3** this report) suggests a northwest/southeast trending ridge centered mid-site of high groundwater, similar to those described in previous quarterly monitoring reports. The southwestern flank of this ridge drops off steeply towards MW-18. The major difference between the groundwater contour map crafted last quarter (2nd Quarter 2008) and the current map of first water elevations is a better developed central groundwater ridge this quarter. Groundwater elevations dropped by an average of 3.5 feet in all upper A1 zone monitoring wells (MW-13, -14, -15, -17, -20, and -21), resulting in a surface dipping to the southwest (see **Figure 4**). The Upper A-1 aquifer beneath MW-17 continues to represent the highest part of the piezometric surface beneath ACC. Groundwater levels dropped by an average of 3.3 feet in all lower A1 monitoring wells (MW-23, -24, and -25).

Results of laboratory analyses show that the Site continues to be impacted by LNAPL in the first water zone monitoring wells MW-19 (a sheen and odor) and MW-18 (a sheen and odor). Elevated dissolved-phase VOCs were identified in first water zone monitoring wells MW-8, -9, -10, -11, -12, and -16. MW-4, -6, -22, and -26 were not sampled this quarter because there was not enough water in the casings to collect a sample.

In both the upper A1 zone (MW-13, -14, -15, -17, -20, and -21) and lower A1 Zone (MW-23, -24, and -25), dissolved-phase VOCs were identified in all the monitoring wells sampled. Concentrations of dissolved-phase VOCs continue to fluctuate with groundwater elevations. Dissolved VOC concentrations in the upper- and lower A1 zones are orders of magnitude lower than those in the first water zone.

Clean Soil, Inc. (CSI) also concludes that the recent groundwater analytical data provide support that the site is experiencing intrinsic biodegradation. Daughter VOC constituents such as 1,1-DCA, 1,1-DCE, cis-1,2-DCE, and VC were detected at dissolved concentrations up to 13,500 ug/L (1,1-DCE in first water zone well MW-11). The low parent VOC concentration to high daughter VOC concentration ratio is a preliminary indicator of intrinsic biodegradation.

**1.0) INTRODUCTION**

Clean Soil, Inc. (CSI) was contracted by Greve Financial Services ((310) 753-5770) to write the report for the Third Quarter 2008 Groundwater Monitoring event at the former Angeles Chemical Company (ACC), Inc. facility located at 8915 Sorensen

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Avenue, Santa Fe Springs, California (See Figure 1, Site Location Map). Quarterly groundwater monitoring was requested by the Department of Toxics Substance Control (DTSC) correspondence dated September 18, 2001. This report presents the results of the 2008 3<sup>rd</sup> quarter monitoring event performed on September 18, 2008.

**2.0) SITE DESCRIPTION**

The site is approximately 1.8 acres in size and completely fenced. The site is bounded by Sorensen Avenue on the east, Air Liquide Corporation to the north and northwest, Plastall Metals Corporation to the north, and a Southern Pacific Railroad easement and McKesson Chemical Company to the south.

The ACC operated as a chemical repackaging facility from 1976 to 2000. A total of thirty-four (34) underground storage tanks (USTs) existed beneath the site. Two (2) USTs, one gasoline and one diesel, and sixteen (16) chemical USTs were excavated and removed under the oversight of the Santa Fe Springs Fire Department. All 16 remaining chemical USTs were decommissioned in place and slurry-filled.

**3.0) PREVIOUS SITE ASSESSMENT WORK**

In January 1990, SCS Engineers, Inc. (SCS) conducted a site investigation and drilled eight borings from 5 feet below grade surface (bgs) to 50 feet bgs. Soil samples collected and analyzed contained benzene, 1,1-dichloroethane (1,1-DCA), 1,1-dichloroethene (1,1-DCE), MEK, methyl isobutyl ketone (MIBK), toluene, 1,1,1-trichloroethane (1,1,1-TCA), tetrachloroethylene (PCE), and xylenes at detectable concentrations.

In June 1990, SCS conducted an additional site investigation at the site by advancing six additional borings drilled from 20.5 feet bgs to 60 feet bgs. A monitoring well (MW-1) was also installed. Soil sample analysis revealed detectable concentrations of the above-mentioned VOCs in addition to acetone and methylene chloride. Dissolved benzene, 1,1-DCA, 1,1-DCE, PCE, trichloroethylene (TCE), and trans-1,2-dichloroethene were detected in MW-1 above maximum contaminant levels (MCLs).

Between 1993 and 1994, SCS conducted further testing at the site. Soil samples were collected from nine borings. Five borings were converted to groundwater monitoring wells MW-2, MW-3, MW-4, MW-6, and MW-7. The predominant compounds detected in soil and groundwater were acetone, MEK, MIBK, chlorinated VOCs, and BTEX.

In 1996 and 1999, SCS conducted separate soil vapor extraction (SVE) pilot tests using several treatment technologies on extraction well E-1 screened from 7 feet bgs and 22 feet bgs. Laboratory analysis identified maximum soil vapor gas concentrations as 1,1,1-TCA (30,300 ppmV) with detectable concentrations of 1,1-DCE, TCE, methylene

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chloride, toluene, PCE and xylenes. The radius of influence was measured between 35 and 80 feet.

In November 1997, SCS conducted a soil vapor survey (SVS) at the site. Soil vapor samples were collected at twenty-three locations at 5 feet bgs. In addition, soil vapor samples were collected at 15 feet bgs in five of the twelve sampling points. The SVS identified maximum VOC concentrations near the railroad tracks located on the northern portion of the site.

Blakely Environmental Investigations, Inc. (BEII) conducted an SVS at the site from November 27 to December 1, 2000. A total of 36 soil vapor sample points, labeled SV1 through SV36, were selected by BEII and approved by the DTSC for analysis. Two discrete soil vapor samples were collected from each soil vapor sample point, one at 8 feet bgs and one at 20 feet bgs. SV1 was an exception since the first soil vapor sample was collected at 10 feet bgs instead of 8 feet bgs. Based on the soil vapor sample results, BEII identified relatively low-level concentrations of VOCs in the silty clay soils at 8 feet bgs. However, the concentrations of VOCs are significantly higher in the sandy soils at 20 feet bgs. Results were submitted to the DTSC by BEII in *Report of Findings*, dated January 10, 2001 with laboratory reports (BEII's *Report of Findings* dated January 10, 2001).

BEII conducted an additional SVS on the ACC site from January 14- to January 17, 2002. The purpose of the SVS was to determine the lateral extent of VOC soil vapors in the vadose zone along the eastern, northern, and southern property line of the site. In addition, BEII performed an SVS on June 13, 2002 on the Air Liquide property to determine the lateral extent of VOC soil vapors in the vadose zone north of the ACC facility. Based on the soil vapor survey results, BEII identified relatively low-level concentrations of VOCs in the silty clay soils at 5-, 7-, 8-, 10-, and 12 feet bgs. However, the concentrations of VOCs are significantly higher in the sandy soils at 20 feet bgs, which are more permeable and conducive to soil vapor migration. Furthermore, VOC soil vapor concentrations were higher along the southern property line than along the east and north property line. Results were submitted by BEII to the DTSC in *Report of Findings*, dated October 15, 2002 with laboratory reports.

BEII drilled two soil borings (BSB-1 and BSB-2) and installed two groundwater-monitoring wells (MW-8 and MW-9) on the ACC site from June 5- to June 7, 2002. The purpose of the drilling was to help define the lateral and vertical extent of impacted soil along the eastern ACC property line and to help determine the extent of impacted groundwater. Soil borings BSB-1 and BSB-2 were drilled to 50- and 30 feet bgs, respectively. Monitoring wells MW-8 and MW-9 were installed to 40.5- and 45.5 feet bgs, respectively. Soil sample results identified elevated VOC concentrations from monitoring well MW-8 at depth between 29- and 40 feet bgs. Results were submitted by BEII to the DTSC in a *Report of Findings* dated October 15, 2002 with laboratory reports.

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BEII drilled eight soil borings (BSB-3 through BSB-10) and eleven cone penetrometer test (CPT) locations (CPT-1 though CPT-11) in August 2002 to help determine the subsurface geology and extent of impacted soil. In November and December of 2002, BEII drilled seven additional borings (BSB-11 through BSB-17), fifteen additional CPT locations (CPT-12 through CPT-26), and installed twelve additional monitoring wells (MW-10 through MW-21) to help further define the subsurface geology and the extent of VOC-impacted soil/groundwater. Monitoring well MW-1 was also abandoned. In late June of 2003, BEII installed five additional monitoring wells (MW-22 through MW-26) to help define the extent of VOC-impacted soil and groundwater. Monitoring wells MW-2, MW-3, and MW-7 were abandoned. Laboratory results were submitted by BEII to the DTSC. A *Summary Site Characterization Report*, dated February 2004, was submitted by Shaw Environmental & Infrastructure, Inc. (Shaw) to the DTSC and included interpretations based on the above-mentioned borings, CPT locations, and monitoring wells. See **Figure 2** for Site Layout Map.

During the 4<sup>th</sup> quarter 2005, CSI began the VOC treatment of the vadose zone at the ACC site using a soil vapor extraction system (SVE). SVE monitoring program provides data to the DTSC regarding the removal of VOCs on a quarterly basis. SVE monitoring consists of such activities as collection of SVE samples, field analysis, laboratory analysis, and reporting. A carbon-based SVE system was turned on initially October 12, 2007 (Greve received its Permit-to-Construct the carbon-based system June 4, 2007). The system was shut down between December 19, 2007 and January 29, 2008 in order to exchange carbon in the canisters. The unit was turned back on January 29, 2008. The SVE system was again shut down June 28, 2008, for carbon exchange after break through in the third carbon canister (farthest from the influent pipe) was detected during normal weekly monitoring. The SVE system operated for all 93 days of the current quarter (2,232 hours). Approximately 56 pounds of VOCs were removed by the SVE system this quarter. The total of pounds of VOCs removed by SVE in 2007 and 2008 is 18,319 pounds.

#### **4.0) REGIONAL GEOLOGY/HYDROGEOLOGY**

The site is located near the northern boundary of the Santa Fe Springs Plain within the Los Angeles Coastal Plain at an elevation of approximately 150 feet above mean sea level (msl). Surface sediments consist of fluvial deposits composed of interbedded gravel, sand, silt, and clay. Available data from California Water Resources Bulletin No. 104 (June 1961) indicate that the surface sediments may be Holocene and/or part of the upper Pleistocene Lakewood Formation, which ranges from 40- to 50 feet thick beneath the site. The Lakewood Formation has lateral lithologic changes with discontinuous permeable zones that vary in particle size. Stratified deposits of sand, silty sand, silt, and fine-grained gravel comprising the upper portion of the lower Pleistocene San Pedro Formation underlies the Lakewood Formation.

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The site lies within the Central Basin Pressure area, a division of the Central Ground Water Basin, which extends over most of the Coastal Plain. The shallow (perched) groundwater occurs within the Lakewood Formation. The deeper groundwater occurs in the Hollydale aquifer, which is the uppermost regional aquifer in the Pleistocene San Pedro Formation. The major water-producing aquifers in the region are the Lynwood aquifer located approximately 200 feet bgs, the Silverado aquifer located at approximately 275 feet bgs, and the Sunnyside aquifer located at approximately 600 feet bgs.

## **5.0) SITE GEOLOGY/HYDROGEOLOGY**

Based on the borings and CPT pushes, Shaw (2004) identified six distinct hydrostratigraphic units beneath the ACC site. Uppermost is an “overburden” unit comprised of a wide range of materials from fill to silty sands to clayey silts that is designated as “unit A”. Next is a well-defined clean sand (sometimes with gravel) unit designated as “unit B”. Following is a fine-grained predominantly silt zone designated as “unit C1” which is underlain by a coarser-grained silty sand zone named “unit D”. Next is the finest-grained unit observed, “unit C2”, which is predominantly a clayey silt that can be finer-grained (clay) at the top and coarser-grained (sandy silt) with depth. Finally, “unit E” is a clean coarse-grained sand (similar to unit B) that is considered the top of the regional aquifer system.

A perched water zone, which is currently dry, was identified within unit B. The regional aquifer zone from 50- to 80 feet bgs (referred as the A1 zone) is identified within unit E. A zone of saturation (referred as the “first water” zone) exists between the A1 and the perched water zone.

For this report, monitoring wells MW-13, -14, -15, -17, -20, and -21 are referred to as ‘upper A1 zone monitoring wells’ and MW-23, -24, and -25 as ‘lower A1 zone monitoring wells’. Monitoring wells MW-4, -6, -8, -9, -10, -11, -12, -16, -18, -19, -22, and -26 are noted as the ‘first water zone monitoring wells’. Monitoring well MW-22 has insufficient groundwater in it for sample collection. Wells MW-4, -6, and -26 were dry. Monitoring wells MW-18 and -19 have product sheens in them and were not sampled this quarter.

The groundwater gradient historically has been to the southwest and northeast. On September 18, 2008 the first water elevations were measured to be at depths between 36.11 (MW-11) and 44.00 (MW-18) feet bgs (elevations of 112.97 and 105.63 feet above msl, respectively). A potentiometric groundwater contour map of the first water is included as **Figure 3**. The surface depicted in **Figure 3** is characterized as a northwest/southeast trending ridge of high groundwater, similar to those described in previous quarterly monitoring reports, which is centered mid-site. The southwestern flank of this ridge drops off steeply towards MW-18. Groundwater in the upper A1 zone was measured to be at depths between 47.70 (MW-17) and 50.95 (MW-15) feet bgs

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(elevations of 101.33 and 99.65 feet above msl, respectively). A potentiometric groundwater contour map of the upper A1 zone water is included as **Figure 4**. The planar piezometric surface defined in **Figure 4** dips to the southwest. Groundwater in the lower A1 zone was measured to be at depths between 46.35 (MW-23) and 51.00 (MW-25) feet bgs (elevations of 102.07 and 99.64 feet above msl, respectively). No potentiometric groundwater contour map was crafted for the lower A1 zone because there are only three data points to contour. Depths to groundwater in all zones and their respective elevations are presented in **Table 1**.

Hydrographs are included as **Figures 5 through 8** in this report. Groundwater elevations of both the first water and A1 zone tend to be higher in June and lower in December, suggesting a seasonal recharge in both hydrologic zones. This pattern appears to hold true with typical rainfall, but not for this monitoring period. Groundwater levels in all aquifers are falling, reflecting the lack of precipitation in the previous quarters. In the first water wells (with the exception of MW-12, which rose 0.60 feet), the overall average drop in groundwater averaged 2.11 feet. The northwest/southeast-tending ridge of higher groundwater elevation mid-site that has been consistently monitored for the past few periods persists (**Figure 3**). The groundwater beneath the upper A1 wells fell an average of 3.27 feet. The resulting piezometric surface in the upper A-1 aquifer continues to be dip to the southwest (see **Figure 4**), with MW-17 representing the highest groundwater beneath the ACC in this aquifer. Groundwater levels dropped in all lower A1 monitoring wells (MW-23, -24, and -25) by an average of 3.3 feet.

## **6.0) GROUNDWATER MONITORING PROTOCOL**

The purpose of the current groundwater monitoring program is to provide data to the DTSC regarding the piezometric surface, water quality, and the presence of free product (FP), if any, on a quarterly basis. Groundwater monitoring consists of such activities as water level measurement, well sounding for detection of FP, collection of groundwater samples, field analysis, laboratory analysis, and reporting. The fieldwork was performed as follows.

The depth to groundwater was measured in each well using a decontaminated water-level indicator capable of a measurement to within 1/100th of a foot. Prior to, and following, collection of measurements from each well, the portion of the water-level indicator entering groundwater was decontaminated using a 3-stage decontamination procedure consisting of a potable wash with water containing Liquinox soap followed by a double-purified water rinse. The depth to water was measured in all monitoring wells before any of the wells were purged. Wells were measured, where practicable, in the order of least to the most contaminated based on past analyses. Otherwise the wells were sampled in the order of availability. For the ACC wells, the following order of gauging was followed this quarter: MW-9, -17, 23, -16, -4, -6, -8, -20, -11, -14, -19, -22, -15, -25, -24, -18, -21, -13, -12, and -26.

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The well box and casing were opened carefully to preclude debris or dirt from falling into the open casing. Once the well cap was removed, the water-level indicator was lowered into the well until a consistent tone was registered. Several soundings were repeated to verify the measured depth to groundwater. The depth of groundwater was measured from a reference point marked on the lip of each well casing. A licensed surveyor has surveyed the elevation of each reference point. The depth of groundwater was recorded on the field-sampling log for each well. Other relevant information such as physical condition of the well, presence of hydrocarbon odors, etc. was also recorded as appropriate on the field-sampling log.

The well sounder used for this project was equipped to measure free product (FP) layers thicker than 0.1 inches. FP was indicated as light non-aqueous phase liquid (LNAPL) or dense non-aqueous phase liquid (DNAPL).

Groundwater samples are analyzed quarterly for:

- Volatile Organic Compounds (VOCs) by EPA Method 8260B to include all Tentatively Identified Compounds (TICs).
- Total Petroleum Hydrocarbons - gasoline (TPH-gas) by EPA Method 8015M.

### **6.1) Well Sampling**

The wells were sampled on September 18, 2008. Representatives from the Department of Toxic Substances Control (DTSC), Cypress, CA were invited to witness the procedure. All groundwater samples were collected in *Snap Samplers*<sup>TM</sup>. A Snap Sampler<sup>TM</sup> is a groundwater-sampling device that employs a double-opening 40 ml VOA vial. Each vial is sealed at depth under water by use of a remote trigger (a wire). The trigger releases an internal, PFA Teflon-coated, stainless steel spring that seals PTFE or PFA Teflon end-caps onto the bottle. The end-caps are designed to seal the water sample within the VOA vial with no headspace vapor. Once the closed vial is retrieved from the well, the bottle is prepared with standard septa screw caps and a label. All critical actions take place submerged in the well, away from weather, surface contamination, and off-gassing loss. The vial can be used directly in standard laboratory auto sampler equipment. The sample is never exposed to the open air from the well to the gas chromatograph.

Sampling personnel wore new nitrile gloves at each well to prevent cross-contamination of the samples. A solvent-free label was affixed to each sample vial denoting the well identification, date, and time of sampling.

Groundwater samples were collected in the following order: MW-9, -17, 23, -16, -8, -20, -11, -14, -22, -15, -25, -24, -18, -21, -13, and -12. Monitoring wells MW-4, -6, -

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22, and -26 had insufficient volumes of water for sampling. MW-19 and -19 have free product sheens in the wells and were not sampled this quarter.

A duplicate sample, collected from monitoring well MW-10, and a trip blank, supplied by the lab, were submitted to the lab for quality assurance/quality control (QA/QC) purposes.

Analytical results are included in **Appendix B**.

**6.2) Sample Handling**

All groundwater and QA/QC samples were labeled and placed inside a cooler chilled to approximately 4°C with bagged ice prior to transport to Alpha Scientific Corporation, a laboratory certified by the California Department of Health Services (Cert. #2633). All samples were logged on the chain-of-custody forms immediately following sampling to insure proper tracking through analysis to the laboratory.

**6.3) Waste Management**

Free product (FP) and decontamination water are stored in sealed 55-gallon drums for a period not to exceed 90 days. Stored wastes will be profiled for hazardous constituents and characterized as Non-Hazardous, California Hazardous, or RCRA Hazardous, as appropriate. Any transportation of waste will be under appropriate manifest.

**7.0) FREE PRODUCT**

FP was identified as light non-aqueous phase liquid (LNAPL) in monitoring well MW-19 (a “sheen”). Each well that contains or has contained FP is tabulated as follows with the total amount of FP removed since each well was installed.

<b><u>Well ID</u></b>	<b><u>Total FP Removed (liters)</u></b>
• MW-4	0.04
• MW-6	15.165
• MW-8	26.49
• MW-10	14.751
• MW-16	0.93
• MW-18	208.522
• MW-19	41.773
• MW-21	1.558
<b>TOTAL</b>	<b>309.229</b>

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Laboratory analysis of FP was performed in October 2001 from MW-6, in June 2002 from MW-6 and MW-8, in December 2003 from MW-16 and MW-19, in March 2004 from MW-10, MW-18 and MW-19, and in September 2004 from MW-8, MW-10, and MW-19. Laboratory analysis results are presented in **Table 2**. Based on the results, the FP contained in MW-6 and MW-8 appears to be different from the FP contained in MW-10, MW-16, and MW-19 when comparing TPH-gas concentrations. Furthermore, the VOC analysis results indicate that FP from MW-10 and MW-18 were similar as compared to the FP from MW-19.

## **8.0) GROUNDWATER SAMPLE RESULTS**

Groundwater samples collected from the first water zone monitoring wells MW-8, -9, -10, -11, -12, and -16 in September 2008 contained dissolved total petroleum hydrocarbon as gasoline (TPH-gas) concentrations measured at -13,100; -3,420; -23,800; -22,400; -386; and -9,910 µg/L, respectively. All first water zone wells sampled show decreases in the concentration of TPH-g this quarter. See **Table 3** and **Figure 9** for dissolved TPH-gas concentrations. Graphs of dissolved contaminant concentrations over time are provided in **Appendix B**.

Groundwater samples collected from the upper A1 zone monitoring wells MW-13, -14, -15, -17, -20, and -21 in September 2008 contained TPH-gas in concentrations measured at -341; -881; -259; -539; -291; and -5,370 µg/L, respectively. MW-13, -14, and -15 show decreases in TPH-g concentration this quarter. The other wells show increases in this compound. All changes in the concentration of TPH-g in these wells are minor this quarter. See **Table 3** and **Figure 10** for dissolved TPH-gas concentrations.

Groundwater samples collected from the lower A1 zone monitoring wells MW-23, -24, and -25 in December 2007 contained TPH-gas in concentrations measured at -415; -492; and -896 µg/L, respectively. All lower A1 zone wells sampled show decreases in the concentration of TPH-g this quarter. See **Table 3** for dissolved TPH-gas concentrations.

Concentrations of dissolved benzene, toluene, ethylbenzene, and (total) xylenes (BTEX) in the first water zone ranged from 8,076 µg/L in MW-10 to non-detect in MW-12 (See **Table 4** and **Figure 9** for dissolved BTEX concentrations). The BTEX concentration in MW-8 decreased by 90% from the previous quarter. All other first water zone wells show a statistical similarity in BTEX concentration with the previous sampling event (2nd Q 2008). The first water zone contains toluene as the primary BTEX constituent. Contaminant graphs for benzene and toluene are provided in **Appendix B**.

Dissolved BTEX in the upper A1 zone was detected in MW-21 at a concentration of 26.0 µg/L (about the same concentration as last quarter but slightly lower). BTEX was detected in trace amounts in MW-14 and MW-15 (See **Tables 4 and 5** and **Figure 10** for

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dissolved BTEX concentrations). Unlike the first water zone, the primary constituent of BTEX in the upper A1 zone this quarter is benzene (last quarter it was xylenes).

The lower A1 zone monitoring wells MW-23, -24, and -25 continue to show no detectable concentrations of dissolved BTEX.

Groundwater sample results from the first water zone showed high VOC concentrations as compared to the relatively low VOC concentrations in the A1 zone (See **Tables 4 and 5**).

Dissolved perchloroethylene (PCE) was identified in the first water zone at a maximum concentration of 121 µg/L in MW-16. Dissolved Trichloroethylene (TCE) was identified at a maximum of 327 µg/L in MW-16 in the first water zone (See **Figure 11**). Historically, dissolved contaminant graphs show relatively consistent dissolved PCE and TCE concentrations from first water wells except for MW-26 where concentrations fluctuate greatly. Maximum concentrations of dissolved PCE and TCE in the upper A1 zone were determined to be 195 µg/L and 122 µg/L in MW-17 (See **Figure 12**). The lower A1 zone contained maximum concentrations of dissolved PCE of 301 µg/L in MW-25 and dissolved TCE of 209 µg/L in MW-25. Wells in the upper and lower A1 zones fluctuated very slightly in dissolved PCE and TCE concentrations this quarter as compared to the previous quarter (See **Appendix B**).

Dissolved concentrations of 1,1,1-Trichloroethane (1,1,1-TCA) was not detected in any of the first water zone wells above the detection level of 2 µg/L. Dissolved 1,1,1-TCA is at a maximum of 36J µg/L in MW-21 and < 5 µg/L in the remainder of the upper A1 zone (See **Figure 12**). The “J” value means that the compound was detected at a trace concentration but not enough to accurately quantify. 1,1,1-TCA was not detected above the detection level of 2 µg/L in any of the lower A1 wells this period.

Groundwater samples were also analyzed for 1,4-Dioxane, a preservative used in 1,1,1-TCA to prolong its shelf life. However, 1,4-Dioxane is more soluble in groundwater than 1,1,1-TCA and will often lead the dissolved 1,1,1-TCA plume. First water zone monitoring wells that contained concentrations of dissolved 1,4-Dioxane were MW-9 (13,400 µg/L) and MW-16 (7,690 µg/L). The remaining wells in this zone had concentrations less than the detection limit of 50 µg/L (MW-8, 10, -11, and -12). Upper A1 zone monitoring wells MW-14 (866 µg/L) and MW-15 (273 µg/L) had concentrations of dissolved 1,4-Dioxane detected in them. The remaining wells in this zone had concentrations less than 50 µg/L (MW-13, -17, -20, and -21). Dissolved concentrations of 1,4-Dioxane were not detected in the lower A1 zone monitoring wells.

Concentrations of dissolved chlorinated VOC daughter products were relatively elevated compared to their respective parent VOCs identified above and also showed a

**Former Angeles Chemical Co.  
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trend of higher dissolved concentrations in the first water zone compared to the deeper A1 zone.

1,1-Dichloroethane (1,1-DCA) is a daughter product from reductive dehalogenation of 1,1,1-TCA and from carbon-carbon double bond reduction of 1,1-DCE, another daughter product. Dissolved 1,1-DCA concentrations were detected in almost every monitoring well sampled. Concentrations of 1,1-DCA were detected between 6,130 µg/L (MW-8) and 12.3 µg/L (MW-12) in the first water zone (See **Figure 11**). MW-16 (2,590 µg/L) showed a significant concentration of this compound. Dissolved 1,1-DCA concentrations in the upper A1 zone ranged between 3,660 µg/L (MW-21) and <1.0 µg/L in MW-13 and -17 (See **Figure 12**). Dissolved 1,1-DCA was detected at concentrations of 2.5J µg/L in MW-25 and <1.0 µg/L in MW-23 and -24.

Dissolved 1,1-Dichloroethylene (1,1-DCE), a daughter product of the dehydrohalogenation of 1,1,1-Trichloroethane (1,1,1-TCA) and reductive dehalogenation of TCE, was detected in the first water zone at concentrations ranging from 1,770 µg/L (MW-16) to <2 µg/L (MW-8, -10, -11 and -12, see **Figure 11**). MW-9 (970 µg/L) also had a significant concentration of 1,1-DCE in the first water zone. Dissolved 1,1-DCE concentrations in the upper A1 zone ranged between 778 µg/L (MW-21) and 4.9J µg/L (MW-13, see **Figure 12**). Dissolved 1,1-DCE was detected in the lower A1 zone at concentrations of 159µg/L (MW-25), 60.1 µg/L (MW-24), and 47.8 µg/L (MW-23). Historically, dissolved concentrations of 1,1-DCE fluctuate in all zones with no observable pattern (See **Appendix B**).

Cis-1,2-Dichloroethlene (cis-1,2-DCE) is also a daughter product of the dehydrohalogenation of 1,1,1-TCA and reductive dehalogenation of TCE. Concentrations of dissolved cis-1,2-DCE were detected in the first water zone between 3,600 µg/L (MW-16) and <2.0 µg/L (MW-8, see **Figure 11**). Dissolved cis-1,2-DCE concentrations in the upper A1 zone ranged from 1,150 µg/L (MW-21) to 6.3 µg/L (MW-13, see **Figure 12**). Dissolved cis-1,2-DCE in the lower A1 zone was detected between 12.5 µg/L (MW-25) and 4.7J µg/L (MW-23). Historically, dissolved concentrations of cis-1,2-DCE fluctuate in all zones with no observable pattern (See **Appendix B**).

Vinyl chloride (VC) is a by-product from the dehydrohalogenation and reductive dehalogenation of the chlorinated VOC daughter products mentioned above. Similar to the other VOCs, concentrations of dissolved VC were at lower concentrations in the deeper A1 zone than in the first water zone. Dissolved VC concentrations were detected in the first water zone between 454 µg/L (in MW-11) and 3.0 µg/L (MW-11, see **Figure 11**). Dissolved VC concentrations in the upper A1 zone ranged from 423 µg/L (MW-21) to <1 µg/L (MW-13, and -17, see **Figure 12**). Dissolved VC was not detected (<1 µg/L) in the lower A1 zone. The A1 zone wells showed fluctuations of dissolved VC concentrations with no discernable pattern over time.

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Methylene chloride is a common laboratory solvent and often is reported in laboratory data. Dissolved methylene chloride was not detected in wells this quarter.

Dissolved acetone was not reported above the detection limit of 5 µg/L in any wells sampled this quarter. Dissolved 2-Butanone (MEK) was not detected above the detection limit of 5 µg/L in any wells sampled this quarter. 4-Methyl-2-pentanone (MIBK) was not reported above the detection limit of 5 µg/L in any wells tested this quarter. Historically, dissolved concentrations of acetone, MEK, and MIBK, when present, fluctuate with no observable pattern (See **Appendix B**).

All groundwater laboratory analytical reports for this quarterly groundwater-monitoring episode are included as **Appendix C**.

## **9.0 CONCLUSIONS**

Groundwater elevations dropped in every groundwater monitoring well gauged this quarter, with exception of first water zone well MW-12. Groundwater elevations in the first water zone wells dropped an average of 2.11 feet. Groundwater elevations in both A1 zones dropped on average of more than three feet. First water wells MW-4, -6, and -26 were found to have no water in them.

The pattern created by dropping groundwater in the first water zone (see **Figure 3** this report) has created a northwest/southeast trending ridge of high groundwater centered mid-site, as described in previous quarter monitoring reports. The southwestern flank of this ridge drops off in that direction. Contoured groundwater elevations from upper A1 zone monitoring wells show in a mostly planar piezometric surface dipping to the southwest (see **Figure 4**).

Results of laboratory analyses show that the Site continues to be impacted by LNAPL in the first water zone monitoring well MW-19 (a sheen and odor). Elevated dissolved-phase VOCs were identified in first water zone monitoring wells MW-8, -9, -10, -11, -12, and -16.

In the upper A1 zone, dissolved-phase VOCs were identified in monitoring wells MW-13, -14, -15, -17, -20, and -21. Concentrations of dissolved-phase VOCs continue to fluctuate with groundwater elevations. Dissolved VOC concentrations in the upper A1 zone are orders of magnitude lower than those in the first water zone.

Concentrations of TPH-g, BTEX, and VOCs in all water zones show statistical similarities with the previous sampling event (2nd Q 2008).

Clean Soil Inc. also concludes that the recent groundwater analytical data provide support that the site is experiencing intrinsic biodegradation. Daughter VOC constituents such as 1,1-DCA, 1,1-DCE, cis-1,2-DCE, and VC were detected at dissolved concentrations up to 8,352 µg/L (in first water zone well MW-16). The low parent VOC concentration to high daughter VOC concentration ratio is a preliminary indicator of intrinsic biodegradation.

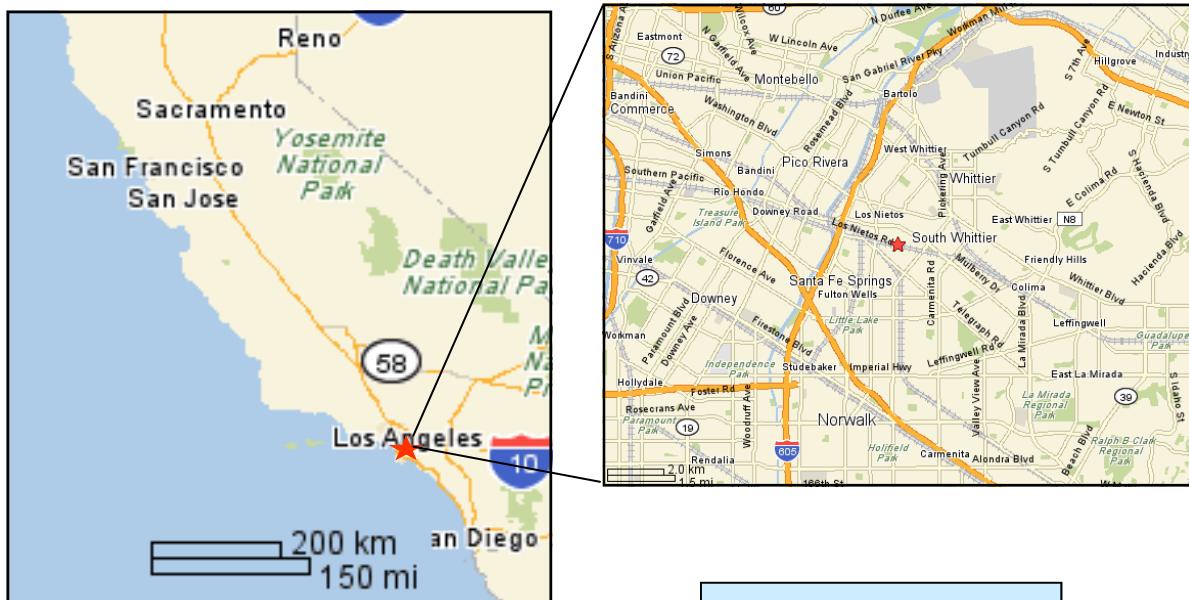
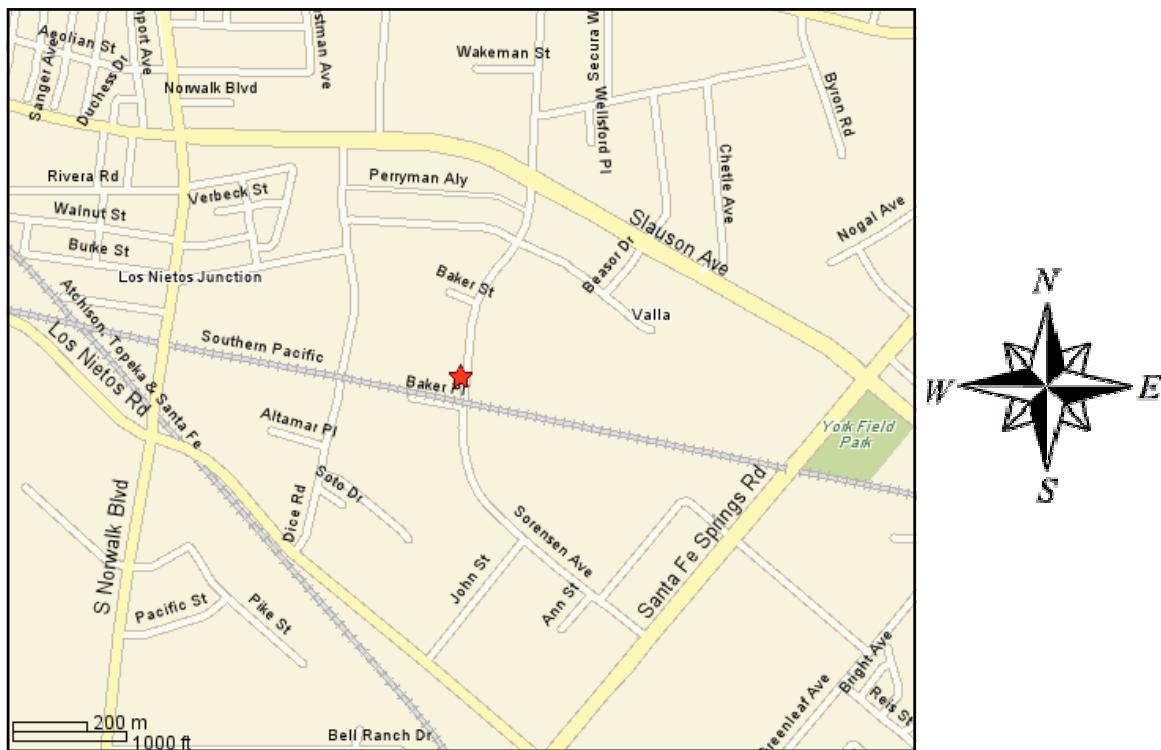
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**10.0) RECOMMENDATIONS**

Clean Soil Inc. recommends the following:

- Continued quarterly groundwater monitoring for VOCs and TPH-gas
- Continued free product removal on a monthly basis
- Continued SVE (carbon-based operations began in October 2007)

# **FIGURES**



Clean Soil, Inc.  
P.O. Box 1381  
Lomita, CA 90717

**Site Location Map**  
Former Angeles Chemical Company  
8915 Sorensen Ave., Santa Fe Springs, CA 90670

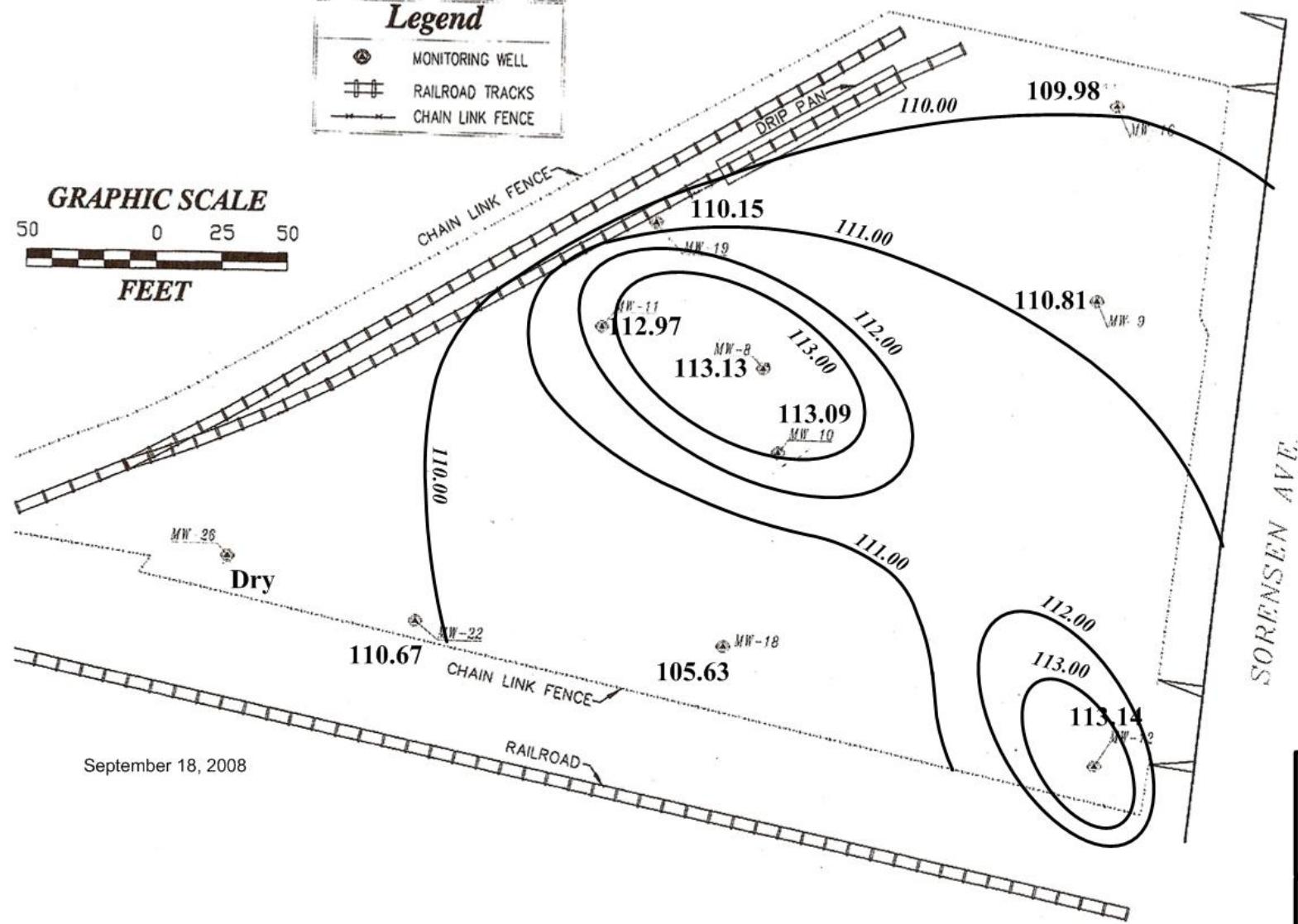
**FIGURE**  
**1**





**GRAPHIC SCALE**

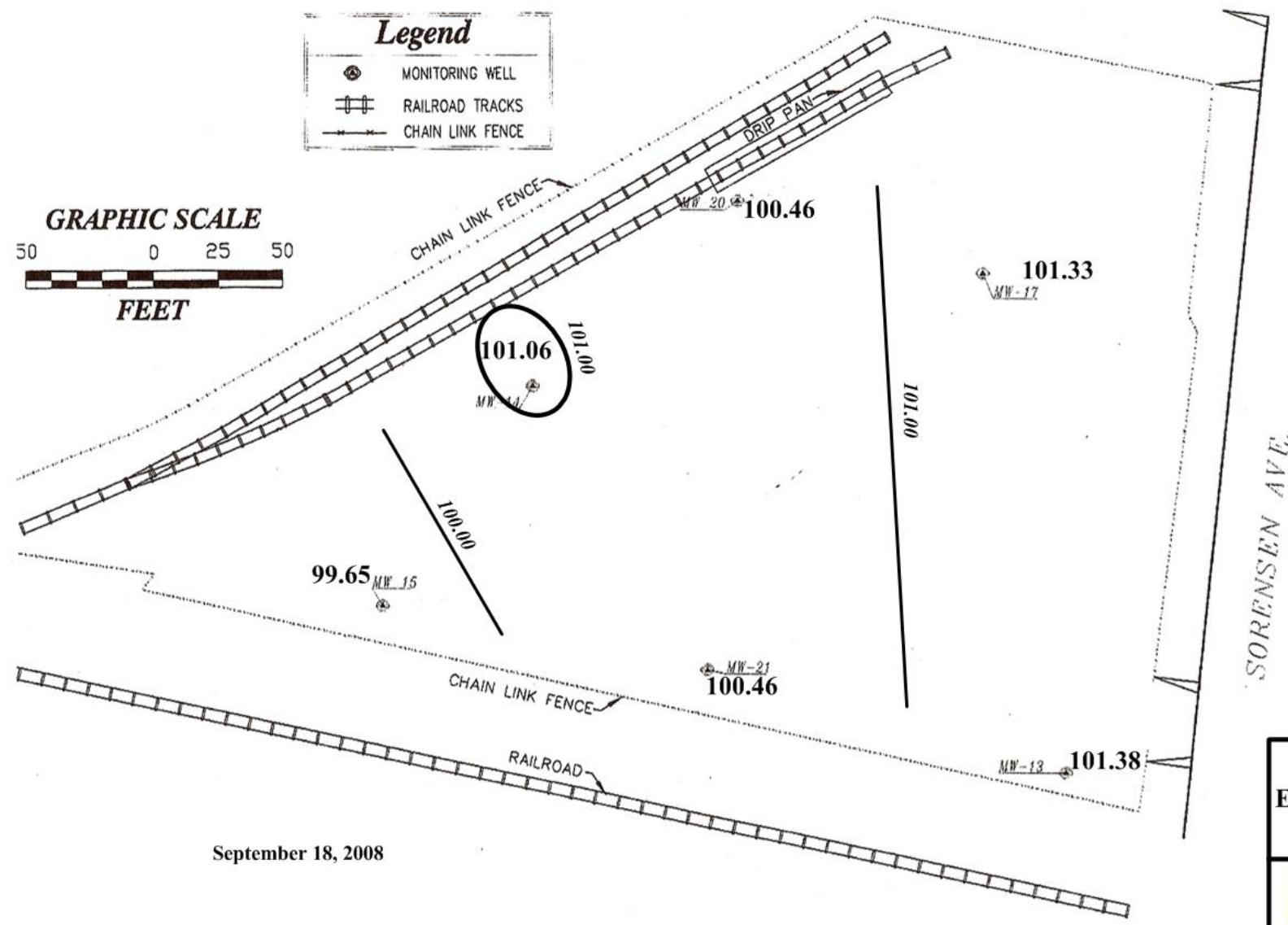
50      0      25      50  
FEET



**First Water Groundwater Elevation  
Contour Map (feet above mean sea  
level)**



**FIGURE 3**

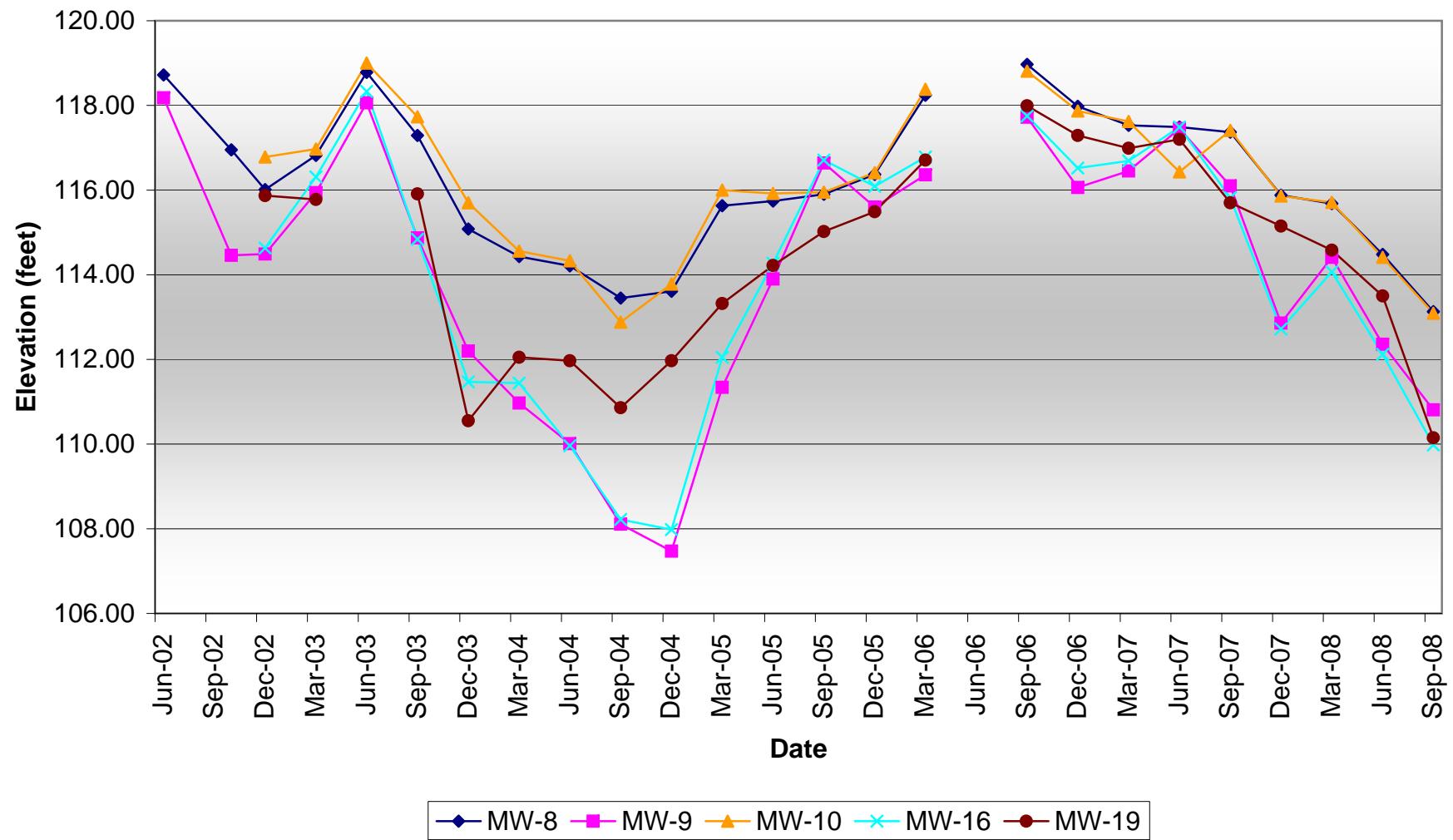


Upper A1 Zone Groundwater  
Elevation Contour Map (feet above  
mean sea level)

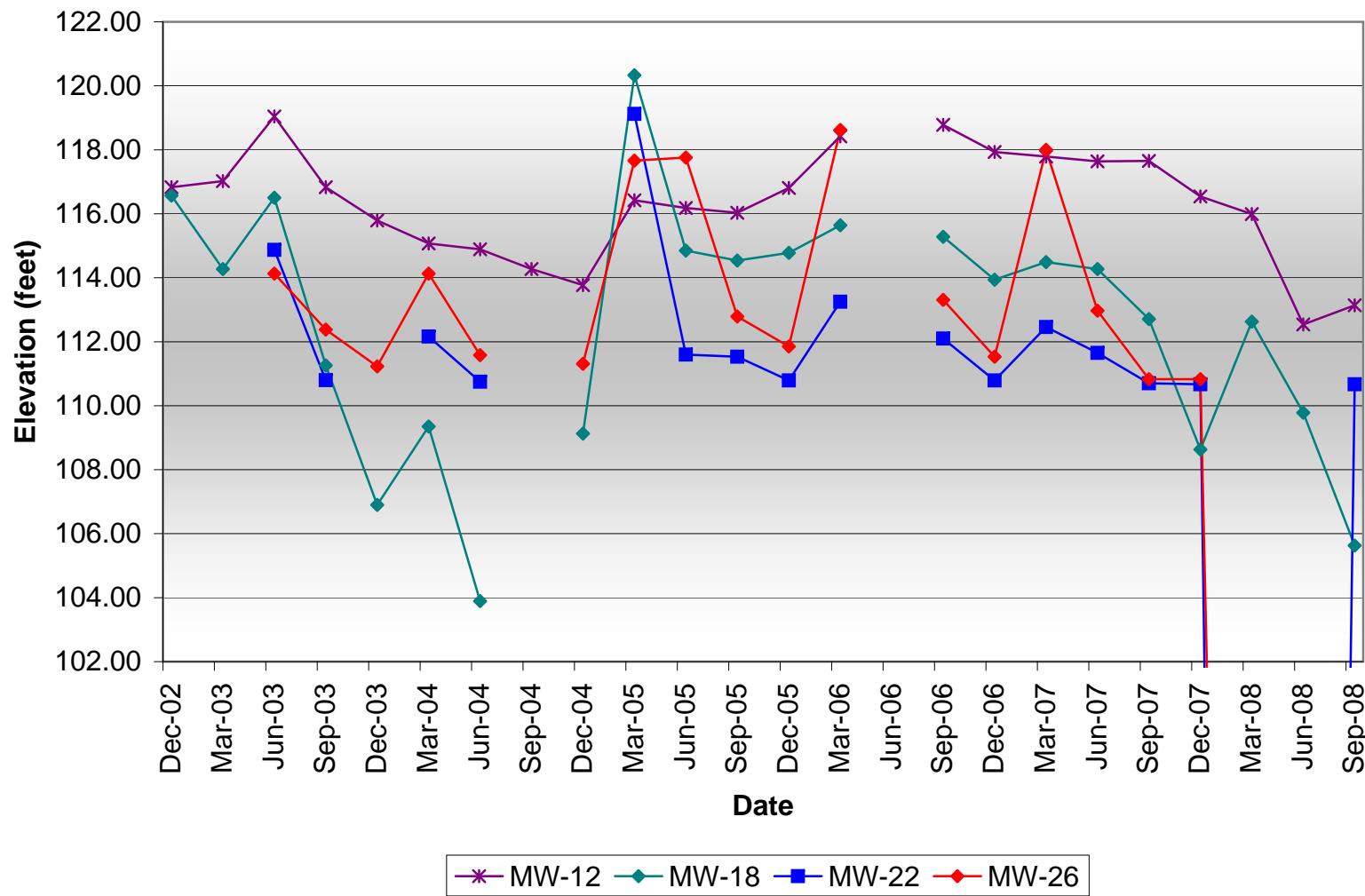


**FIGURE 4**

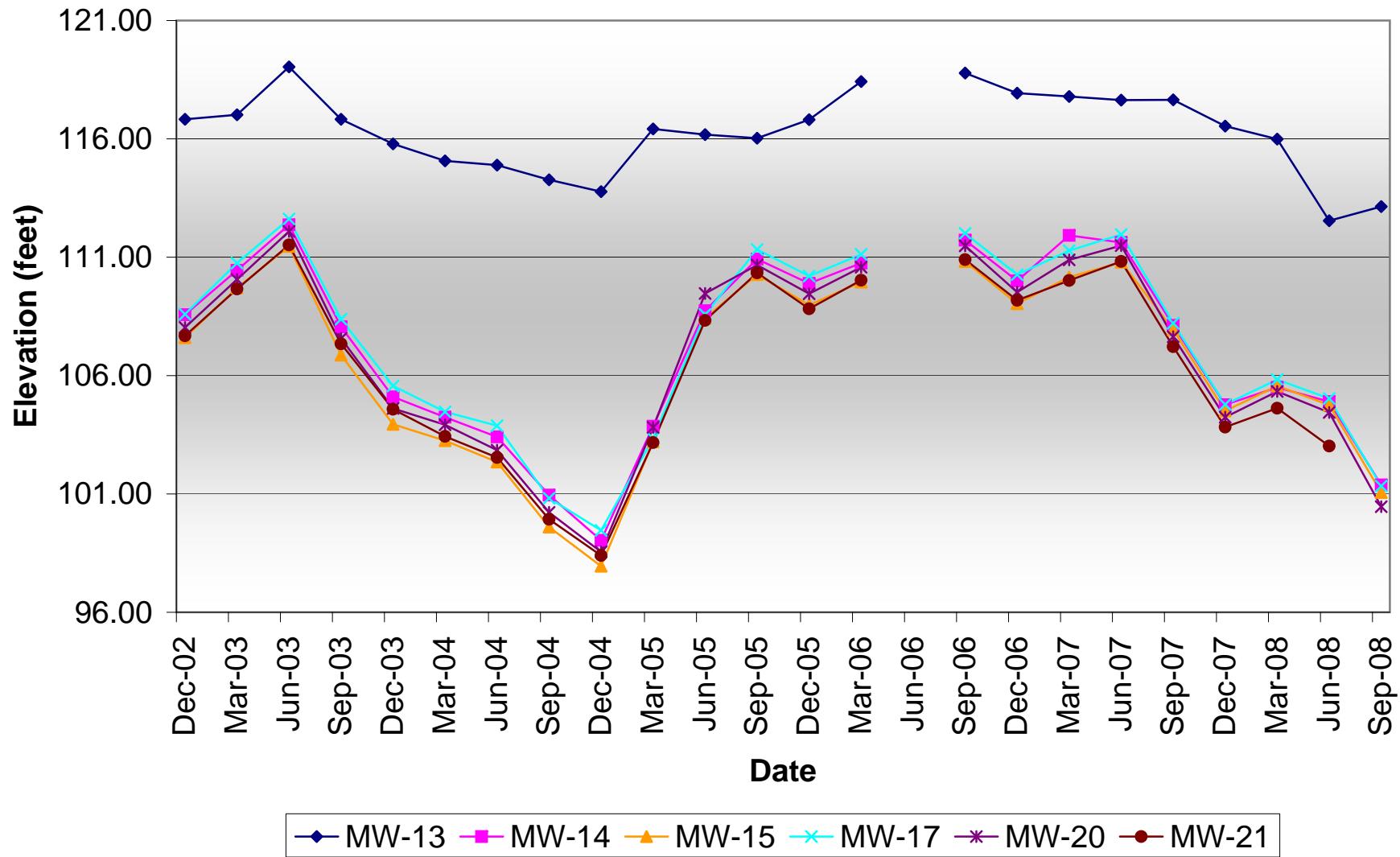
**Figure 5: First Water Groundwater Elevations from Central and Northern Wells**



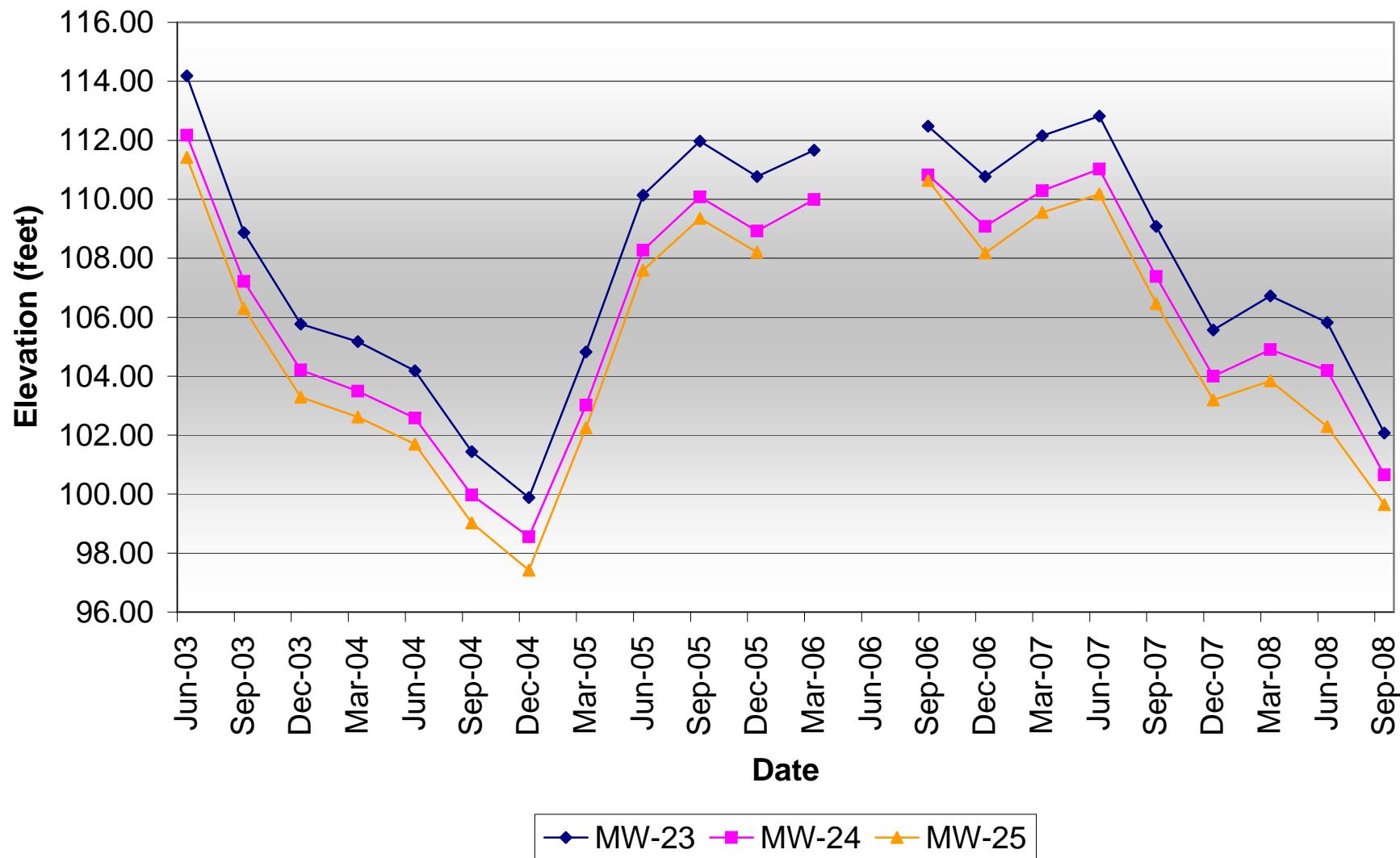
**Figure 6: First Water Groundwater Elevations from Southern Wells**

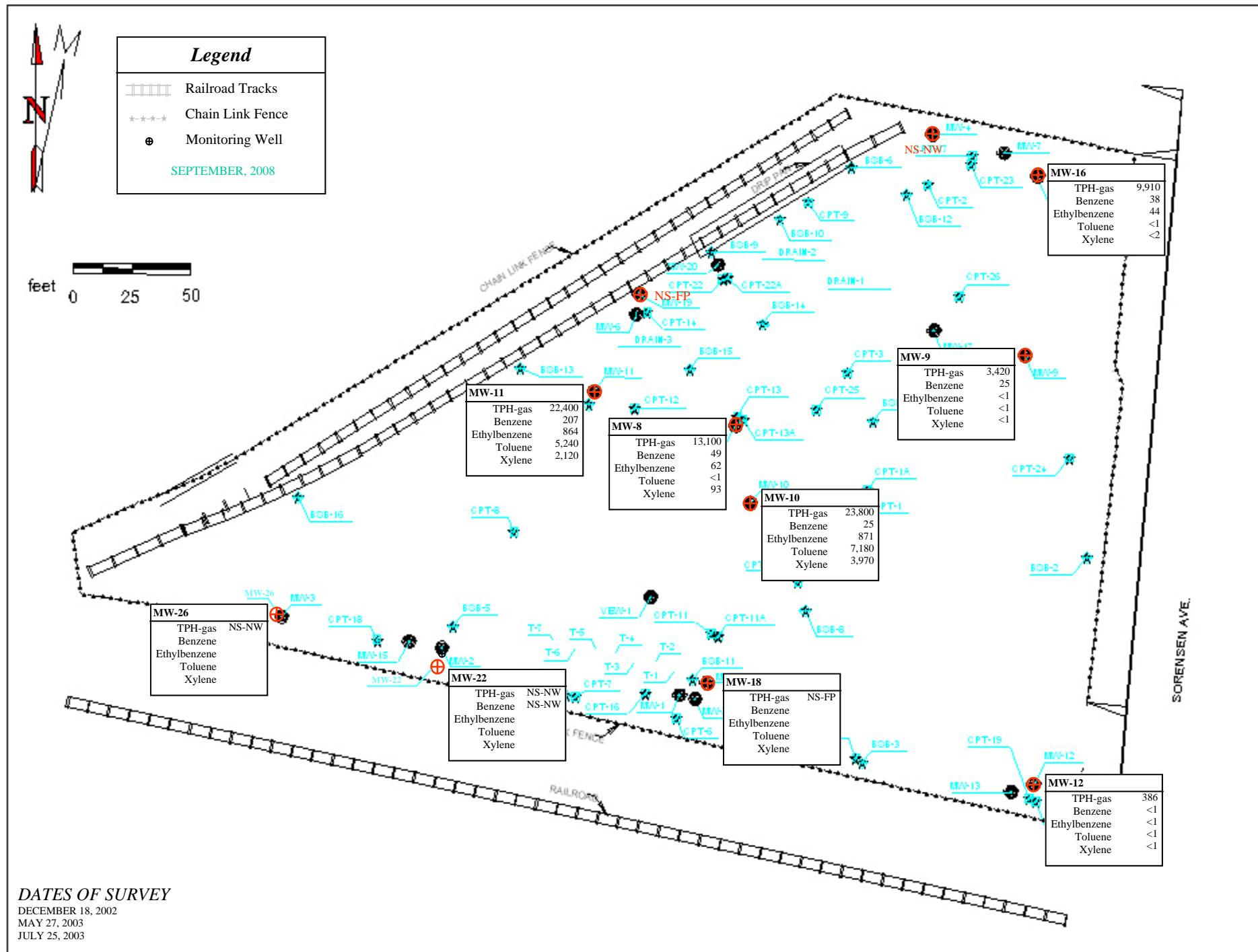


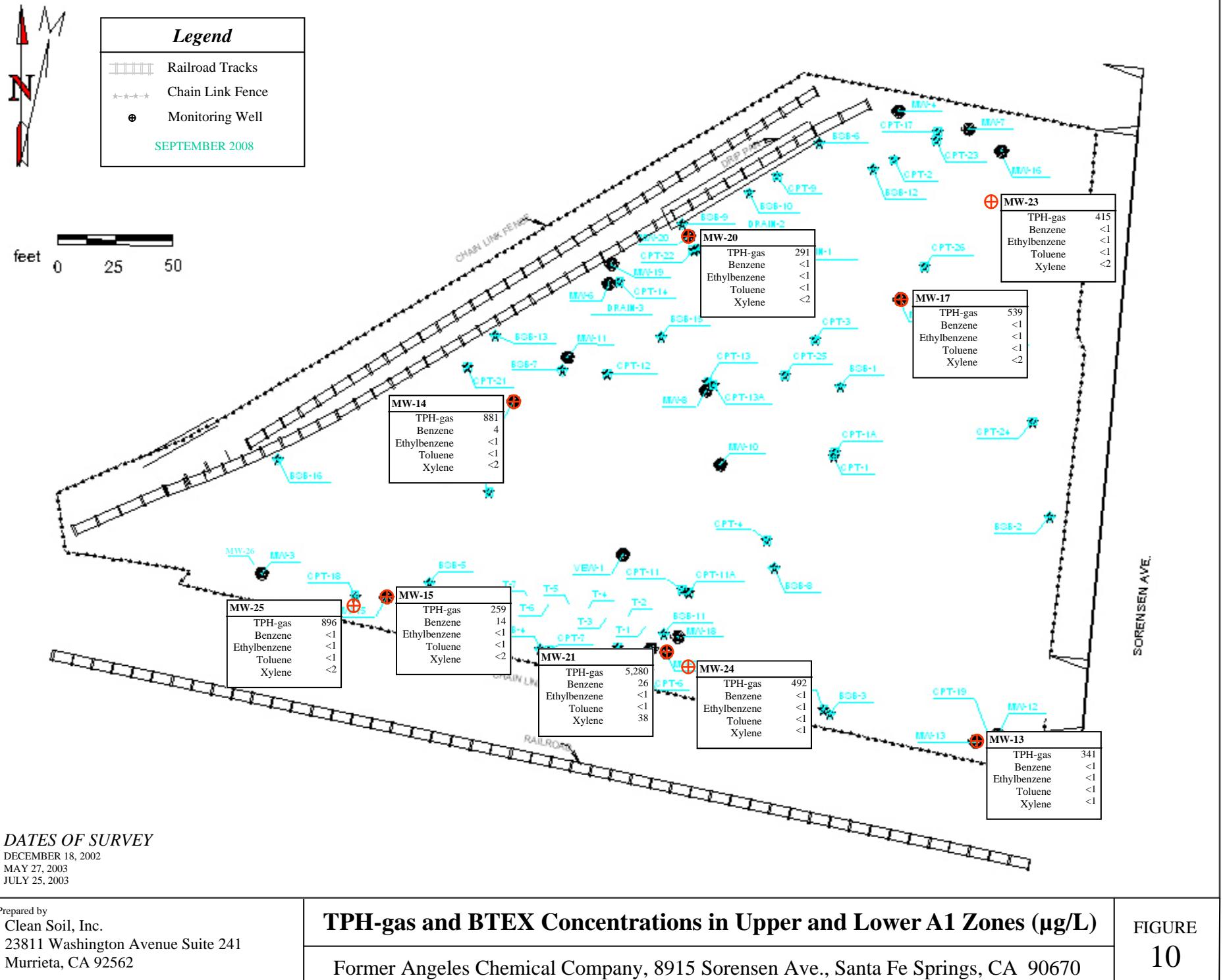
**Figure 7: Upper A1 Groundwater Elevations**

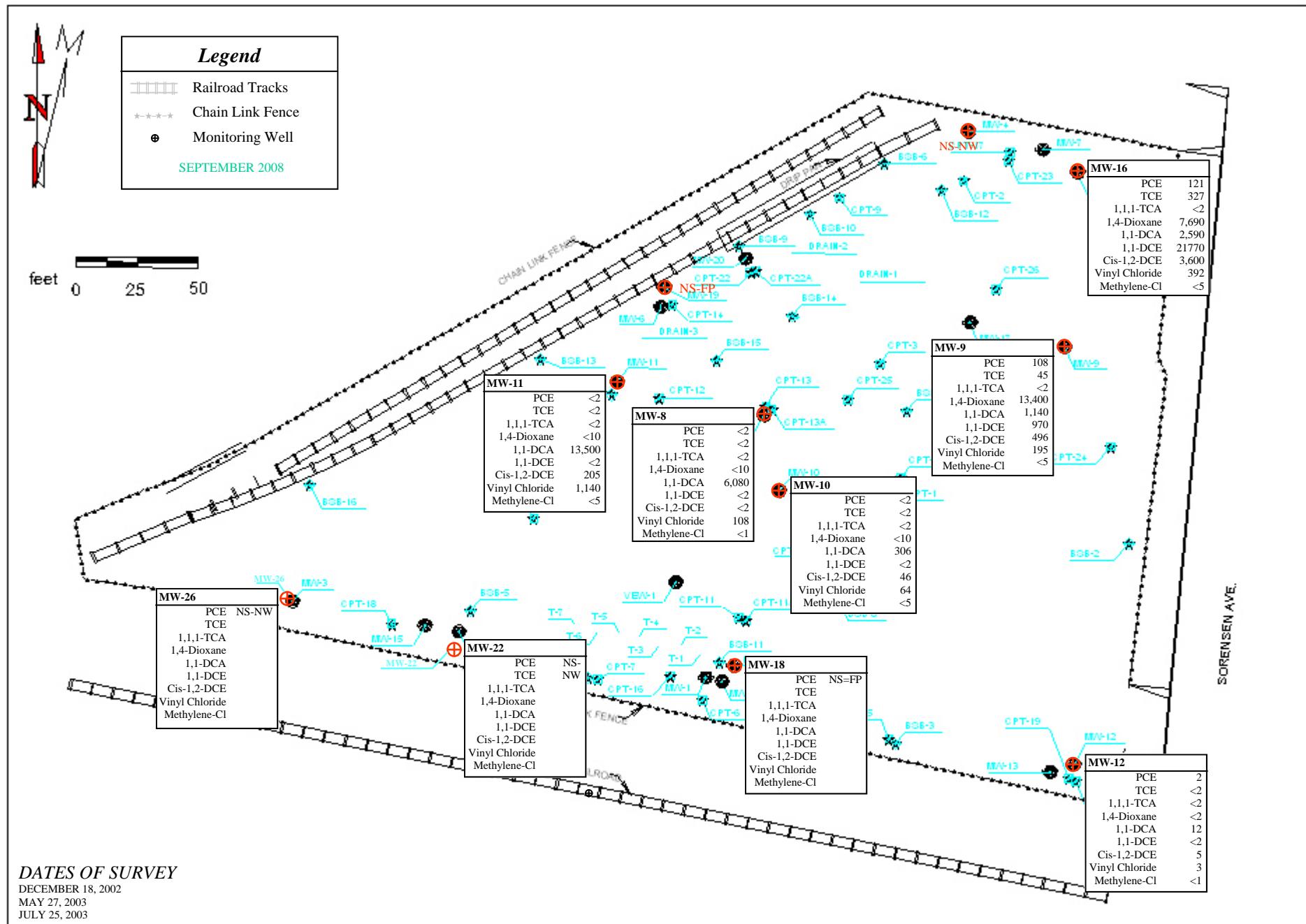


**Figure 8: Lower A1 Groundwater Elevations**





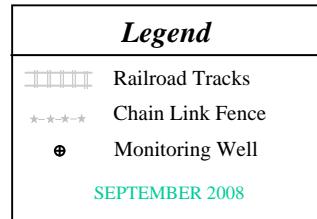
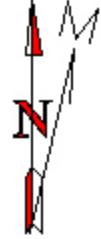




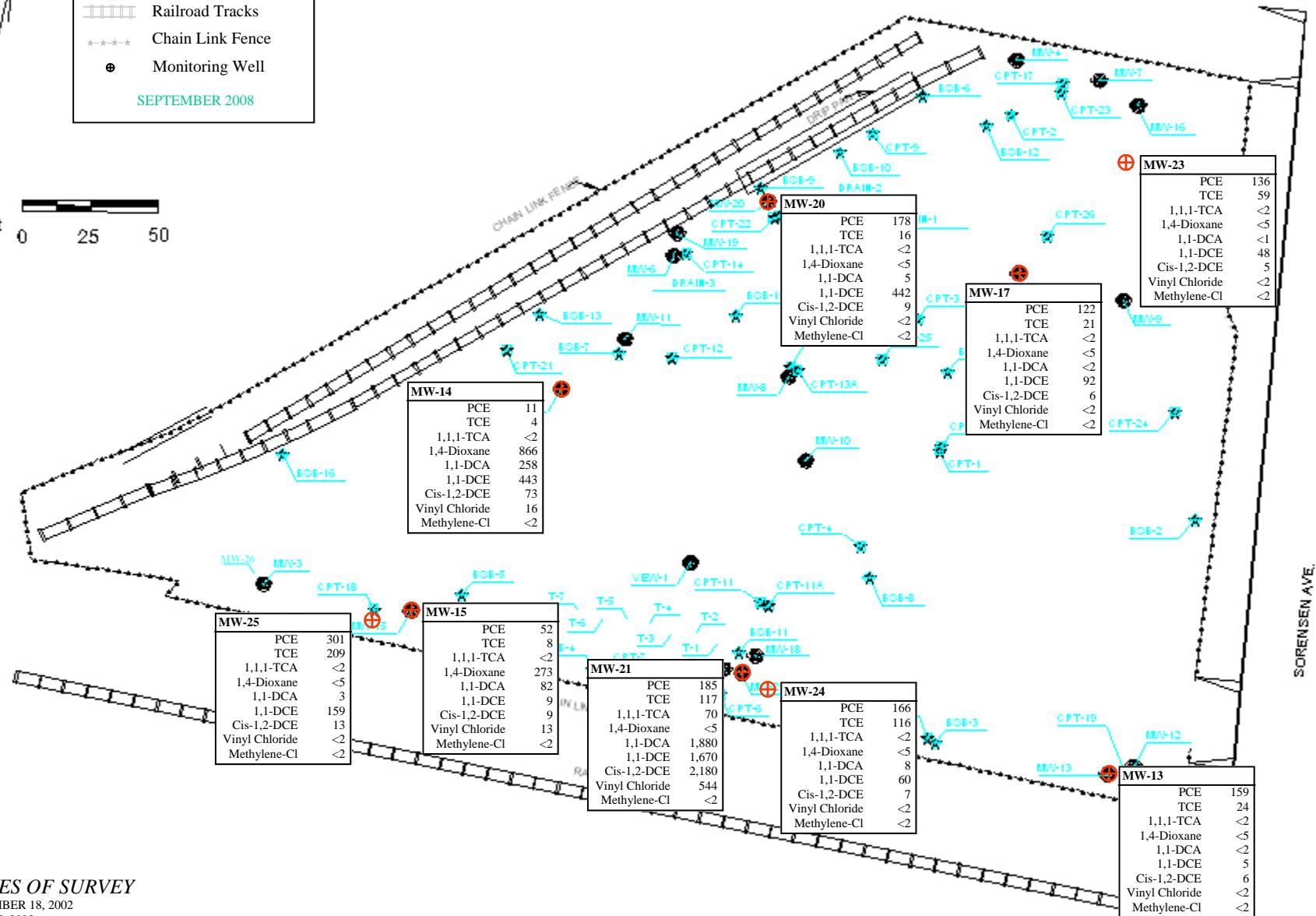
Prepared by  
Clean Soil, Inc.  
23811 Washington Avenue Suite 241  
Murrieta, CA 92562

**Chlorinated VOC's and 1,4 Dioxane Concentrations in First Water (µg/L)**  
Former Angeles Chemical Company, 8915 Sorenson Ave., Santa Fe Springs, CA 90670

FIGURE  
**11**



feet  
0 25 50



#### DATES OF SURVEY

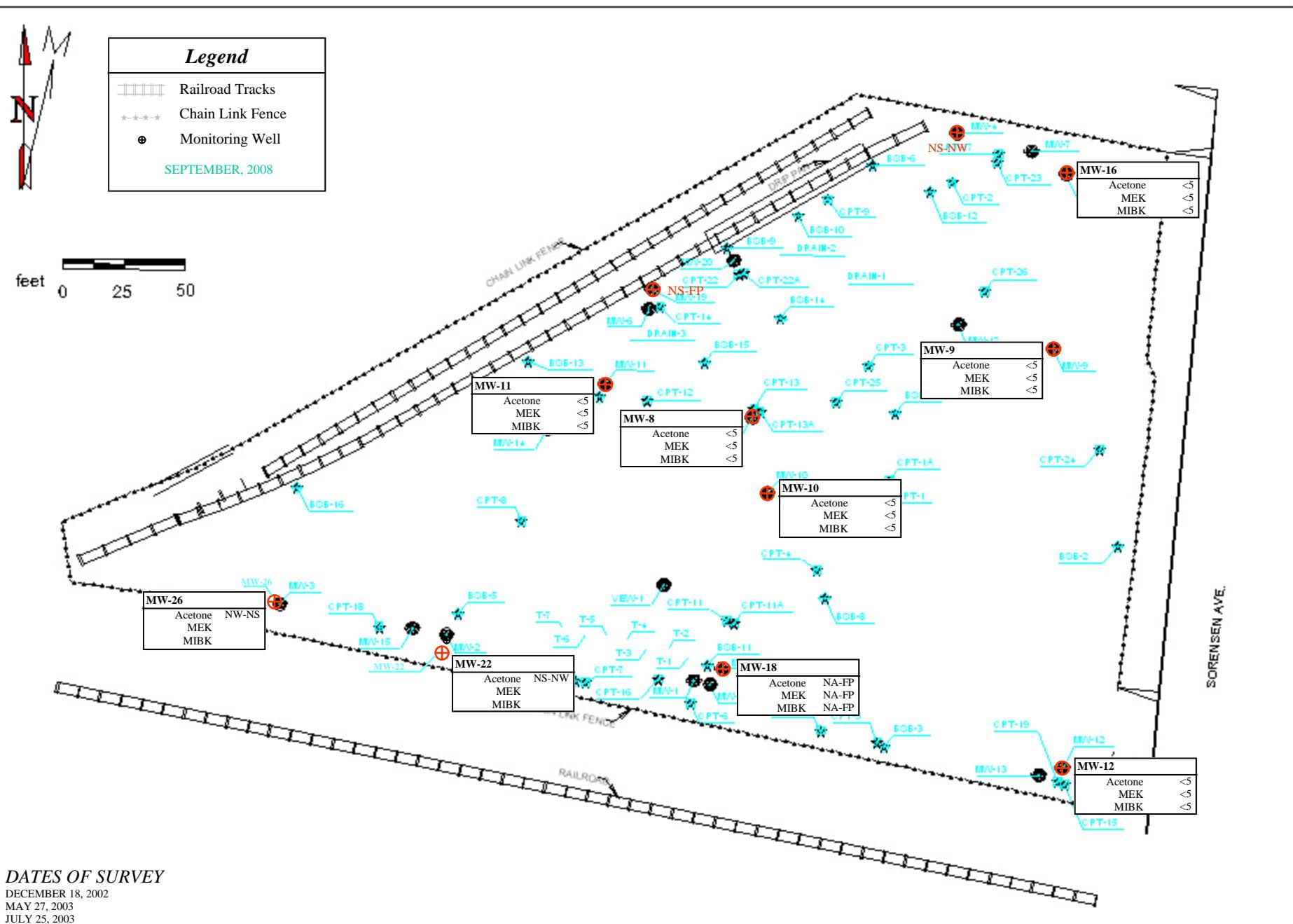
DECEMBER 18, 2002  
MAY 27, 2003  
JULY 25, 2003

Prepared by  
Clean Soil, Inc.  
23811 Washington Avenue Suite 241  
Murrieta, CA 92562

#### Chlorinated VOC's and 1,4 Dioxane Concentrations in Upper and Lower A1 Zones ( $\mu\text{g/L}$ )

Former Angeles Chemical Company, 8915 Sorensen Ave., Santa Fe Springs, CA 90670

FIGURE  
12



#### DATES OF SURVEY

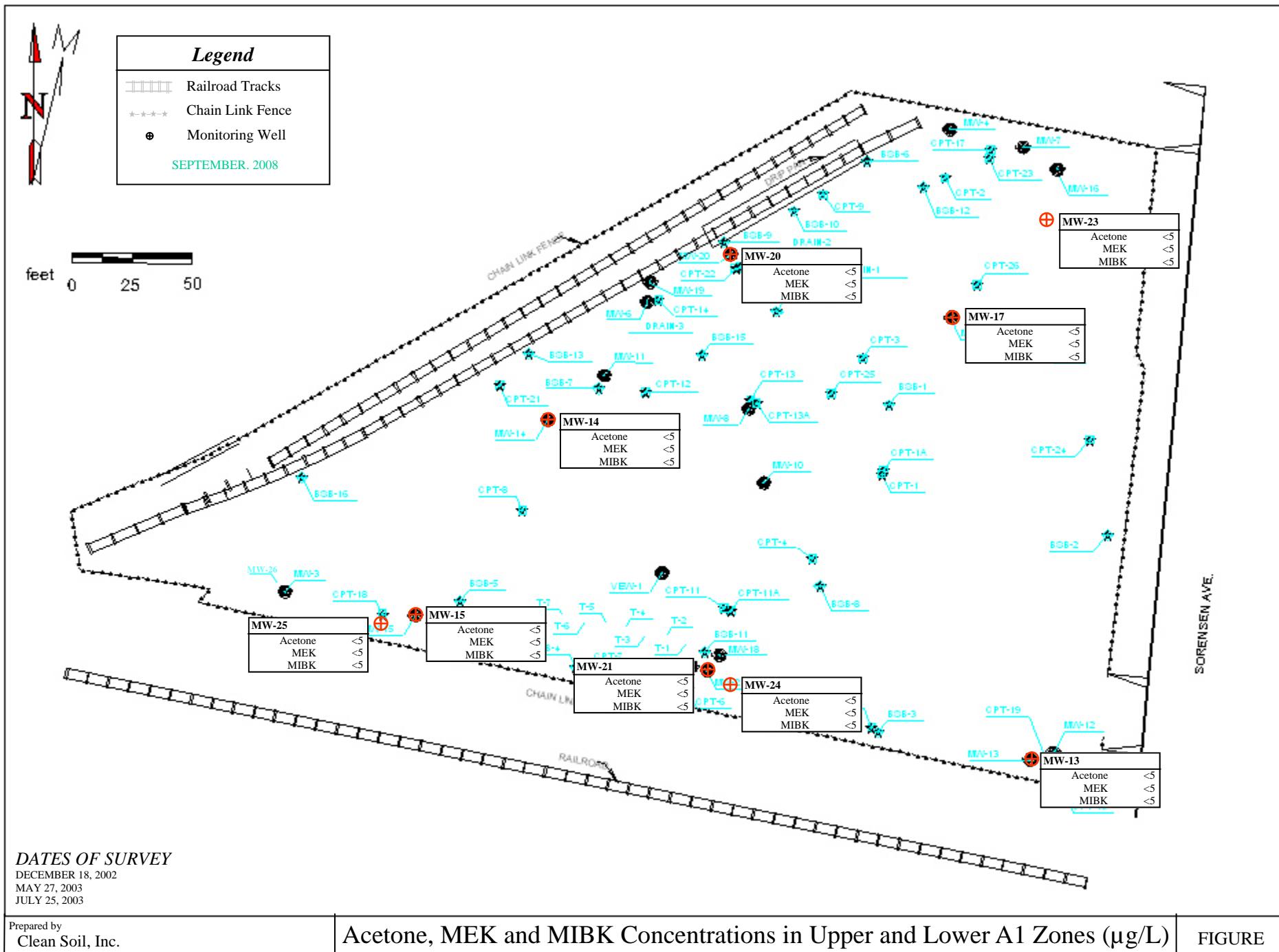
DECEMBER 18, 2002  
MAY 27, 2003  
JULY 25, 2003

Prepared by  
Clean Soil, Inc.  
23811 Washington Avenue Suite 241  
Murrieta, CA 92562

Acetone, MEK and MIBK Concentrations in First Water ( $\mu\text{g/L}$ )

Former Angeles Chemical Company, 8915 Sorensen Ave., Santa Fe Springs, CA 90670

FIGURE  
13



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Murrieta, CA 92562

Acetone, MEK and MIBK Concentrations in Upper and Lower A1 Zones ( $\mu\text{g/L}$ )  
Former Angeles Chemical Company, 8915 Sorensen Ave., Santa Fe Springs, CA 90670

FIGURE  
14

## **TABLES**



**Table 2: TPH-gas and VOCs from Free Product Sample Results using EPA Methods 8015 and 8260 ( $\mu$ g)**

	Date	MW-6	MW-8	MW-10	MW-16	MW-18	MW-19
Screened Interval ( feet bg)		20-30	30.5-40.5	25-40	29-46	21-46	30-45
TPH-gas	Jun-02	812,000,000	801,000,000	NA	NA	NA	NA
	Dec-03	NA	NA	NA	455,000,000	NA	425,000,000
	Mar-04	NA	NA	446,000	NA	NA	NA
	Dec-07						
VOCs							
Acetone	Oct-01	<25,000*					
	Mar-04	NA	NA	<1,250,000	NA	<1,250,000	<1,250,000
	Sep-04	NA	<2,500,000	<2,500,000	NA	NA	<2,500,000
	Dec-07				897,000		
Benzene	Oct-01	110,000*					
	Mar-04	NA	NA	<250,000	NA	<250,000	365,000
	Sep-04	NA	<100,000	<100,000	NA	NA	464,000
	Dec-07						
2-Butanone (MEK)	Oct-01	<25,000*					
	Mar-04	NA	NA	<1,250,000	NA	<1,250,000	<1,250,000
	Sep-04	NA	<2,500,000	<2,500,000	NA	NA	<2,500,000
	Dec-07						
Chloroethane	Mar-04	NA	NA	<500,000	NA	<500,000	<500,000
	Sep-04	NA	<200,000	<200,000	NA	NA	<200,000
	Dec-07						
1,1-Dichloroethane	Oct-01	592,000*					
	Mar-04	NA	NA	3,190,000	NA	1,590,000	625,000
	Sep-04	NA	4,040,000	5,740,000	NA	NA	1,326,000
	Dec-07						
1,2-Dichloroethane	Oct-01	<5,000*					
	Mar-04	NA	NA	<500,000	NA	<500,000	<500,000
	Sep-04	NA	<200,000	<200,000	NA	NA	<200,000
	Dec-07						
1,1-Dichloroethene	Oct-01	417,000*					
	Mar-04	NA	NA	730,000	NA	928,000	4,840,000
	Sep-04	NA	782,000	710,000	NA	NA	5,860,000
	Dec-07						
cis 1,2-Dichloroethene	Oct-01	1,060,000*					
	Mar-04	NA	NA	1,530,000	NA	1,620,000	1,630,000
	Sep-04	NA	1,765,000	1,900,000	NA	NA	2,793,000
	Dec-07						
trans 1,2-Dichloroethene	Oct-01	<5,000*					
	Mar-04	NA	NA	<500,000	NA	<500,000	<500,000
	Sep-04	NA	<200,000	<200,000	NA	NA	<200,000
	Dec-07						
1,4 Dioxane	Mar-04	NA	NA	<12,500,000	NA	<12,500,000	<12,500,000
	Sep-04	NA	<5,000,000	<5,000,000	NA	NA	<5,000,000
	Dec-07						
Ethylbenzene	Oct-01	4,320,000*					
	Mar-04	NA	NA	5,330,000	NS-FP	7,080,000	6,960,000
	Sep-04	NA	5,910,000	7,280,000	NA	NA	8,770,000
	Dec-07				13,400,000		

**Table 2: TPH-gas and VOCs from Free Product Sample Results using EPA Methods 8015 and 8260 ( $\mu\text{g}/\text{m}^3$ )**

VOCs	Date	MW-6	MW-8	MW-10	MW-16	MW-18	MW-19
<b>Methylene Chloride</b>	Oct-01	<5,000*					
	Mar-04	NA	NA	<500,000	NA	<500,000	<500,000
	Sep-04	NA	<200,000	<200,000	NA	NA	<200,000
	Dec-07						
<b>4-Methyl-2-pentanone</b>	Oct-01	<25,000*					
	Mar-04	NA	NA	<1,250,000	NA	<1,250,000	<1,250,000
	Sep-04	NA	<2,500,000	<2,500,000	NA	NA	<2,500,000
	Dec-07						
<b>Naphthalene</b>	Oct-01	1,680,000*					
	Mar-04	NA	NA	1,980,000	NA	1,620,000	4,120,000
	Sep-04	NA	3,260,000	2,890,000	NA	NA	6,000,000
	Dec-07					2,570,000	
<b>n-Propylbenzene</b>	Mar-04	NS-FP	NS-FP	2,820,000	NA	3,230,000	2,980,000
	Sep-04	NA	3,787,000	3,700,000	NA	NA	4,240,000
	Dec-07					5,700,000	
<b>Tetrachloroethene</b>	Oct-01	531,000*					
	Mar-04	NA	NA	<500,000	NA	543,000	4,820,000
	Sep-04	NA	<200,000	<200,000	NA	NA	2,870,000
	Dec-07						
<b>1,1,1-Trichloroethane</b>	Oct-01	28,100,000*					
	Mar-04	NA	NA	8,870,000	NA	4,140,000	35,000,000
	Sep-04	NA	5,460,000	7,330,000	NA	NA	45,700,000
	Dec-07						
<b>Trichloroethene</b>	Oct-01	753,000*					
	Mar-04	NA	NA	<500,000	NA	<500,000	560,000
	Sep-04	NA	<200,000	<200,000	NA	NA	300,000
	Dec-07						
<b>1,2,4-Trimethylbenzene</b>	Oct-01	22,100,000*					
	Mar-04	NA	NA	31,900,000	NA	30,600,000	45,400,000
	Sep-04	NA	43,400,000	37,000,000	NA	NA	60,100,000
	Dec-07					44,800,000	
<b>1,3,5-Trimethylbenzene</b>	Oct-01	5,400,000*					
	Mar-04	NA	NA	8,560,000	NA	9,020,000	9,480,000
	Sep-04	NA	11,746,000	10,100,000	NA	NA	13,500,000
	Dec-07					12,600,000	
<b>Toluene</b>	Oct-01	9,010,000*					
	Mar-04	NA	NA	8,620,000	NA	15,300,000	11,400,000
	Sep-04	NA	9,010,000	15,200,000	NA	NA	16,400,000
	Dec-07					22,500,000	
<b>Vinyl Chloride</b>	Oct-01	<5,000*					
	Mar-04	NA	NA	<500,000	NA	<500,000	<500,000
	Sep-04	NA	<100,000	<100,000	NA	NA	<100,000
	Dec-07						
<b>Xylenes</b>	Oct-01	10,370,000*					
	Mar-04	NA	NA	17,600,000	NA	22,500,000	16,000,000
	Sep-04	NA	21,400,000	26,300,000	NA	NA	22,100,000
	Dec-07					65,300,000	

NA= Not Analyzed.

Blue= Chemicals stored on-site.

Red= Transformation compounds.



























**Table 5: Detected VOCs from Diffusion Bag Groundwater Samples using EPA Method 8260 (µg/L)**

	<u>Date</u>	<u>Depth</u>	<u>MW-23</u>	<u>MW-24</u>	<u>MW-25</u>
Screened Interval (feet bg)			71-81	67-77	71-81
DTW (ft)	15-Dec-03		42.65	45.69	47.35
	30-Mar-04		43.25	46.41	48.03
<b>VOCs</b>					
Acetone	15-Dec-03	1.5'	<25	<25	<25
	15-Dec-03	7.5'	<25	<25	<25
	30-Mar-04	2.5'	<25	<25	<25
	30-Mar-04	7.5'	<25	<25	<25
Benzene	15-Dec-03	1.5'	<1	<1	<1
	15-Dec-03	7.5'	<1	<1	<1
	30-Mar-04	2.5'	<1	<1	<1
	30-Mar-04	7.5'	<1	<1	<1
2-Butanone (MEK)	15-Dec-03	1.5'	<25	<25	<25
	15-Dec-03	7.5'	<25	<25	<25
	30-Mar-04	2.5'	<25	<25	<25
	30-Mar-04	7.5'	<25	<25	<25
Chloroethane	15-Dec-03	1.5'	<2	<2	<2
	15-Dec-03	7.5'	<2	<2	<2
	30-Mar-04	2.5'	<2	<2	<2
	30-Mar-04	7.5'	<2	<2	<2
1,1-Dichloroethane	15-Dec-03	1.5'	<2	<2	<2
	15-Dec-03	7.5'	<2	<2	<2
	30-Mar-04	2.5'	<2	<2	<2
	30-Mar-04	7.5'	<2	<2	<2
1,2-Dichloroethane	15-Dec-03	1.5'	<2	<2	<2
	15-Dec-03	7.5'	<2	<2	<2
	30-Mar-04	2.5'	<2	<2	<2
	30-Mar-04	7.5'	<2	<2	<2
1,1-Dichloroethene	15-Dec-03	1.5'	6	14.6	7.4
	15-Dec-03	7.5'	6.1	<2	6.2
	30-Mar-04	2.5'	4.4	7.6	7.4
	30-Mar-04	7.5'	4.2	6.6	6.2
cis 1,2-Dichloroethene	15-Dec-03	1.5'	2.4	8.8	3.4
	15-Dec-03	7.5'	<2	5.7	<2
	30-Mar-04	2.5'	<2	11.7	<2
	30-Mar-04	7.5'	<2	11.3	<2

**Table 5: Detected VOCs from Diffusion Bag Groundwater Samples using EPA Method 8260 (µg/L)**

<b>VOCs</b>	<b>Date</b>	<b>Depth</b>	<b>MW-23</b>	<b>MW-24</b>	<b>MW-25</b>
trans 1,2-Dichloroethene	15-Dec-03	1.5'	<2	<2	<2
	15-Dec-03	7.5'	<2	<2	<2
	30-Mar-04	2.5'	<2	<2	<2
	30-Mar-04	7.5'	<2	<2	<2
1,4 Dioxane	15-Dec-03	1.5'	<50	<50	<50
	15-Dec-03	7.5'	<50	<50	<50
	30-Mar-04	2.5'	<50	<50	<50
	30-Mar-04	7.5'	<50	<50	<50
Ethylbenzene	15-Dec-03	1.5'	<1	<1	<1
	15-Dec-03	7.5'	<1	<1	<1
	30-Mar-04	2.5'	<1	<1	<1
	30-Mar-04	7.5'	<1	<1	<1
Methylene Chloride	15-Dec-03	1.5'	<2	<2	<2
	15-Dec-03	7.5'	<2	<2	<2
	30-Mar-04	2.5'	<2	<2	<2
	30-Mar-04	7.5'	<2	<2	<2
4-Methyl-2-pentanone	15-Dec-03	1.5'	<25	<25	<25
	15-Dec-03	7.5'	<25	<25	<25
	30-Mar-04	2.5'	<25	<25	<25
	30-Mar-04	7.5'	<25	<25	<25
Naphthalene	15-Dec-03	1.5'	<2	<2	<2
	15-Dec-03	7.5'	<2	<2	<2
	30-Mar-04	2.5'	<2	<2	<2
	30-Mar-04	7.5'	<2	<2	<2
n-Propylbenzene	15-Dec-03	1.5'	<2	<2	<2
	15-Dec-03	7.5'	<2	<2	<2
	30-Mar-04	2.5'	<2	<2	<2
	30-Mar-04	7.5'	<2	<2	<2
Tetrachloroethene	15-Dec-03	1.5'	30.6	75.4	37.1
	15-Dec-03	7.5'	14.8	24.3	37.2
	30-Mar-04	2.5'	38.2	225	30.3
	30-Mar-04	7.5'	37.7	263	24.9

**Table 5: Detected VOCs from Diffusion Bag Groundwater Samples using EPA Method 8260 (µg/L)**

<b>VOCs</b>	<b>Date</b>	<b>Depth</b>	<b>MW-23</b>	<b>MW-24</b>	<b>MW-25</b>
1,1,1-Trichloroethane	15-Dec-03	1.5'	3.2	2.3	<2
	15-Dec-03	7.5'	2.6	<2	<2
	30-Mar-04	2.5'	<2	<2	<2
	30-Mar-04	7.5'	<2	<2	<2
Trichloroethene	15-Dec-03	1.5'	11.3	51.4	38.5
	15-Dec-03	7.5'	7.9	49.3	39.4
	30-Mar-04	2.5'	14.2	74.5	34.9
	30-Mar-04	7.5'	14.7	67.1	18.6
1,2,4-Trimethylbenzene	15-Dec-03	1.5'	<2	<2	<2
	15-Dec-03	7.5'	<2	<2	<2
	30-Mar-04	2.5'	<2	<2	<2
	30-Mar-04	7.5'	<2	<2	<2
1,3,5-Trimethylbenzene	15-Dec-03	1.5'	<2	<2	<2
	15-Dec-03	7.5'	<2	<2	<2
	30-Mar-04	2.5'	<2	<2	<2
	30-Mar-04	7.5'	<2	<2	<2
Toluene	15-Dec-03	1.5'	<1	<1	<1
	15-Dec-03	7.5'	<1	<1	<1
	30-Mar-04	2.5'	<1	<1	<1
	30-Mar-04	7.5'	<1	<1	<1
Vinyl Chloride	15-Dec-03	1.5'	<2	<2	<2
	15-Dec-03	7.5'	<2	<2	<2
	30-Mar-04	2.5'	<2	<2	<2
	30-Mar-04	7.5'	<2	<2	<2
Xylenes	15-Dec-03	1.5'	<1	<1	<1
	15-Dec-03	7.5'	<1	<1	<1
	30-Mar-04	2.5'	<1	<1	<1
	30-Mar-04	7.5'	<1	<1	<1
DTW= Depth to Water.					
Depth= Depth above well bottom.					
Blue= Chemicals stored on-site.					
Red= Transformation compounds.					







**Table 7: Dissolved Metal Sample Results (mg/L)**

<b>Dissolved Metals</b>	<b>EPA Method</b>	<b>Date</b>	<b>MW-1</b>	<b>MW-2</b>	<b>MW-3</b>	<b>MW-4</b>	<b>MW-6</b>	<b>MW-7</b>	<b>MW-8</b>	<b>MW-9</b>	<b>MCLs</b>
Antimony	7040	Oct-01	<0.5	<0.5	<0.5	NS-FP	NS-FP	<0.5			0.006
		Feb-02	<0.1	<0.1	<0.1	NS-FP	NS-FP	<0.1			
		Jun-02	<0.005	<0.005	<0.005	NS-FP	NS-FP	<0.005	NS-FP	<0.005	
		Oct-02	<0.005	<0.005	<0.005	NS-FP	NS-FP	<0.005	NS-FP	<0.005	
Arsenic	7060	Oct-01	0.026	0.061	<0.005	NS-FP	NS-FP	0.071			0.05
		Feb-02	0.068	0.044	0.006	NS-FP	NS-FP	0.113			
		Jun-02	0.064	0.046	<0.005	NS-FP	NS-FP	0.145	NS-FP	<0.005	
		Oct-02	0.015	0.038	<0.005	NS-FP	NS-FP	0.078	NS-FP	<0.005	
Barium	7080	Oct-01	<0.5	<0.5	<0.5	NS-FP	NS-FP	<0.5			1
		Feb-02	<0.005	<0.005	<0.005	NS-FP	NS-FP	<0.005			
		Jun-02	0.8	0.88	0.51	NS-FP	NS-FP	0.68	NS-FP	0.66	
		Oct-02	0.984	0.962	0.91	NS-FP	NS-FP	0.897	NS-FP	0.683	
Beryllium	7090	Oct-01	<0.05	<0.05	<0.05	NS-FP	NS-FP	<0.05			0.004
		Feb-02	<0.005	<0.005	<0.005	NS-FP	NS-FP	<0.005			
		Jun-02	<0.002	<0.002	<0.002	NS-FP	NS-FP	<0.002	NS-FP	<0.002	
		Oct-02	<0.002	<0.002	<0.002	NS-FP	NS-FP	<0.002	NS-FP	<0.002	
Cadmium	7130	Oct-01	<0.05	<0.05	<0.05	NS-FP	NS-FP	<0.05			0.005
		Feb-02	<0.04	<0.04	<0.04	NS-FP	NS-FP	<0.04			
		Jun-02	<0.005	<0.005	<0.005	NS-FP	NS-FP	<0.005	NS-FP	<0.005	
		Oct-02	<0.005	<0.005	<0.005	NS-FP	NS-FP	<0.005	NS-FP	<0.005	
Chromium	7190	Oct-01	<0.1	<0.1	<0.1	NS-FP	NS-FP	<0.1			0.05
		Feb-02	<0.02	<0.02	<0.02	NS-FP	NS-FP	<0.02			
		Jun-02	0.015	0.016	0.016	NS-FP	NS-FP	0.017	NS-FP	0.019	
		Oct-02	0.0188	0.0185	0.02	NS-FP	NS-FP	0.021	NS-FP	0.024	
Cobalt	7200	Oct-01	<0.1	0.12	<0.1	NS-FP	NS-FP	<0.1			None
		Feb-02	<0.04	<0.04	<0.04	NS-FP	NS-FP	<0.04			
		Jun-02	0.23	0.2	0.18	NS-FP	NS-FP	0.11	NS-FP	0.18	
		Oct-02	<0.1	<0.1	<0.1	NS-FP	NS-FP	<0.1	NS-FP	<0.1	
Copper	7210	Oct-01	<0.05	<0.05	<0.05	NS-FP	NS-FP	<0.05			1.3
		Feb-02	<0.005	<0.005	<0.005	NS-FP	NS-FP	<0.005			
		Jun-02	<0.1	<0.1	<0.1	NS-FP	NS-FP	<0.1	NS-FP	<0.1	
		Oct-02	<0.1	<0.1	<0.1	NS-FP	NS-FP	<0.1	NS-FP	<0.1	

Table 7 (cont.): Dissolved Metal Sample Results (mg/L)											
Dissolved Metals	EPA Method	Date	MW-1	MW-2	MW-3	MW-4	MW-6	MW-7	MW-8	MW-9	MCLs
Lead	7240	Oct-01	<0.1	<0.1	<0.1	NS-FP	NS-FP	<0.1			0.05
		Feb-02	<0.002	<0.002	<0.002	NS-FP	NS-FP	<0.002			
		Jun-02	<0.005	<0.005	<0.005	NS-FP	NS-FP	<0.005	NS-FP	<0.005	
		Oct-02	<0.005	<0.005	<0.005	NS-FP	NS-FP	<0.005	NS-FP	<0.005	
Mercury	7471	Oct-01	<0.001	<0.001	<0.001	NS-FP	NS-FP	<0.001			0.002
		Feb-02	<0.001	<0.001	<0.001	NS-FP	NS-FP	<0.001			
		Jun-02	<0.001	<0.001	<0.001	NS-FP	NS-FP	<0.001	NS-FP	<0.001	
		Oct-02	<0.001	<0.001	<0.001	NS-FP	NS-FP	<0.001	NS-FP	<0.001	
Molybdenum	7480	Oct-01	<0.4	<0.4	<0.4	NS-FP	NS-FP	<0.4			0.035*
		Feb-02	<0.1	<0.1	<0.1	NS-FP	NS-FP	<0.1			
		Jun-02	<0.035	<0.035	<0.035	NS-FP	NS-FP	<0.035	NS-FP	<0.035	
		Oct-02	<0.035	<0.035	<0.035	NS-FP	NS-FP	<0.035	NS-FP	<0.035	
Nickel	7520	Oct-01	<0.1	<0.1	<0.1	NS-FP	NS-FP	<0.1			0.1
		Feb-02	<0.04	<0.04	<0.04	NS-FP	NS-FP	<0.04			
		Jun-02	0.14	0.17	0.2	NS-FP	NS-FP	0.21	NS-FP	0.18	
		Oct-02	<0.05	<0.05	<0.05	NS-FP	NS-FP	<0.05	NS-FP	<0.05	
Selenium	7740	Oct-01	<0.005	<0.005	<0.005	NS-FP	NS-FP	<0.005			0.05
		Feb-02	<0.005	<0.005	<0.005	NS-FP	NS-FP	<0.005			
		Jun-02	<0.005	<0.005	<0.005	NS-FP	NS-FP	<0.005	NS-FP	<0.005	
		Oct-02	<0.005	<0.005	<0.005	NS-FP	NS-FP	<0.005	NS-FP	<0.005	
Silver	7760	Oct-01	<0.05	<0.05	<0.05	NS-FP	NS-FP	<0.05			0.1
		Feb-02	<0.005	<0.005	<0.005	NS-FP	NS-FP	<0.005			
		Jun-02	<0.01	<0.01	<0.01	NS-FP	NS-FP	<0.01	NS-FP	<0.01	
		Oct-02	<0.01	<0.01	<0.01	NS-FP	NS-FP	<0.01	NS-FP	<0.01	
Thallium	7840	Oct-01	<0.2	<0.2	<0.2	NS-FP	NS-FP	<0.2			0.002
		Feb-02	<0.005	<0.005	<0.005	NS-FP	NS-FP	<0.005			
		Jun-02	<0.002	<0.002	<0.002	NS-FP	NS-FP	<0.002	NS-FP	<0.002	
		Oct-02	<0.002	<0.002	<0.002	NS-FP	NS-FP	<0.002	NS-FP	<0.002	
Vanadium	7910	Oct-01	<0.5	<0.5	<0.5	NS-FP	NS-FP	<0.5			0.06*
		Feb-02	0.03	0.05	0.16	NS-FP	NS-FP	0.14			
		Jun-02	<0.06	<0.06	<0.06	NS-FP	NS-FP	<0.06	NS-FP	<0.06	
		Oct-02	<0.06	<0.06	<0.06	NS-FP	NS-FP	<0.06	NS-FP	<0.06	
Zinc	7950	Oct-01	<0.05	<0.05	<0.05	NS-FP	NS-FP	<0.05			5
		Feb-02	<0.01	<0.01	<0.01	NS-FP	NS-FP	<0.01			
		Jun-02	0.07	0.04	0.05	NS-FP	NS-FP	0.04	NS-FP	0.23	
		Oct-02	<0.01	<0.01	<0.01	NS-FP	NS-FP	<0.01	NS-FP	<0.01	

NS-FP= Not Sampled Free Product present.

MCLs= Maximum Contaminant Levels.

\* = Health Advisories.

TABLE 8 FACC Free Product Removal Data Summary

Well ID	Date	Product Thickness (feet)	Method of Removal	Volume Removed	Volume Removed (mL)	FP Removed to Date (mL)
MW-1	11/30/2000	Sheen	None	0	0	0
	10/30/2001	Sheen	None	0	0	0
	2/15/2002	0.02	None	0	0	0
	11/13/2002	0.03	None	0	0	0
Mw-1 Total Liters Removed:						0.000
MW-4	10/30/2001	Sheen	None	0	0	0
	2/15/2002	0.06	None	0	0	0
	10/7/2002	Not measured	None	0	0	0
	6/30/2004	0.2	None	0	0	0
	7/23/2004	0.17	None	0	0	0
	9/16/2004	0.16	Bailer	15 mL	15	15
	9/28/2004	0.14	None	0	0	15
	10/11/2004	0.14	Bailer	15 mL	15	30
	10/22/2004	0.12	None	0	0	30
	11/1/2004	0.12	None	0	0	30
	11/24/2004	0.12	None	0	0	30
	12/21/2004	0.13	Bailer	10 mL	10	40
	1/4/2005	0.12	None	0	0	40
			None	0	0	40
MW-4 Total Liters Removed:						0.040
MW-6	11/30/2000	Not measured	None	0	0	0
	10/30/2001	0.5	None	0	0	0
	1/18/2002	0.69	Bailer	1.0 gallon	3785	3785
	2/15/2002	0.94	Bailer	0.5 gallon	1892	5677
	6/7/2002	1	Bailer	1.0 gallon	3785	9462
	6/10/2002	0.6	Bailer	0.5 gallon	1892	11354
	6/13/2002	0.34	Bailer	0.5 gallon	1893	13247
	6/14/2002	Not measured	Bailer	0.5 gallon	1893	15140
	10/7/2002	Not measured	None	0	0	15140
	12/2/2002	0.37	None	0	0	15140
	9/16/2004	0.02	None	0	0	15140
	9/28/2004	0.02	None	0	0	15140
	10/11/2004	0.01	None	0	0	15140
	10/22/2004	0.01	None	0	0	15140
	11/1/2004	0.09	None	0	0	15140
	11/24/2004	0.05	None	0	0	15140
	12/21/2004	0.04	Bailer	25 mL	25	15165
	1/4/2005	0.02	None	0	0	15165
MW-6 Total Liters Removed:						15.165
<b>TABLE 8 FACC Free Product Removal Data Summary</b>						
MW-8	6/7/2002	0.84	Bailer	2 gallons	7570	7570
	6/10/2002	0.11	None	0	0	7570
	6/13/2002	0.87	Bailer	1 gallon	3785	11355
	6/14/2002	Not Measured	Bailer	3 gallons	11355	22710
	10/7/2002	Not Measured	None	0	0	22710
	12/2/2002	0.44	None	0	0	22710
	12/18/2002	Not Measured	Bailer	1 gallon	3785	26495
	12/18/2002	0.26	Bailer	1 L	1000	23710
	2/8/2004	0.24	Bailer	100 mL	100	23810
	2/10/2004	0.36	Bailer	100 mL	100	23910
	2/11/2004	0.1	None	0	0	23910
	2/13/2004	Not Measured	None	0	0	23910
	2/14/2004	0.15	Bailer	50 mL	50	23960
	2/16/2004	Not Measured	None	0	0	23960
	2/17/2004	0.08	None	0	0	23960
	2/18/2004	0.08	None	0	0	23960
	3/19/2004	0.19	Bailer	150 mL	150	24110
	4/30/2004	0.75	Bailer	250 mL	250	24360
	5/27/2004	0.3	Bailer	50 mL	50	24410
	6/30/2004	0.37	Bailer	50 mL	50	24460
	7/9/2004	0.1	Bailer	10 mL	10	24470
	7/23/2004	0.34	Bailer	20 mL	20	24490
	8/13/2004	0.34	Bailer	50 mL	50	24540
	9/16/2004	0.46	Bailer	250 mL	250	24790
	9/28/2004	0.41	Bailer	300 mL	300	25090
	10/1/2004	0.36	Bailer	350 mL	350	25440
	10/22/2004	0.4	Bailer	400 mL	400	25840
	11/1/2004	0.15	Bailer	75 mL	75	25915
	11/24/2004	0.18	Bailer	50 mL	50	25965
	12/8/2004	0.32	Bailer	250 mL	250	26215
	12/21/2004	0.24	Bailer	150 mL	150	26365
	1/4/2005	0.21	Bailer	125 mL	125	26490
MW-8 Total Liters Removed:						26.490
<b>No Sheen</b>						

**TABLE 8 FACC Free Product Removal Data Summary**

Well ID	Date	Product Thickness (feet)	Method of Removal	Volume Removed	Volume Removed (mL)	FP Removed to Date (mL)
MW-10	3/19/2004	0.29	Bailer	0.25 gallons	946	946
	4/30/2004	0.4	Bailer	100 mL	100	1046
	5/27/2004	0.82	Bailer	0.5 gallons	1893	2939
	6/30/2004	0.51	Bailer	0.25 gallons	946	3885
	7/9/2004	0.12	Bailer	15 mL	15	3900
	7/23/2004	0.26	Bailer	10 mL	10	3910
	8/13/2004	1.18	Bailer	1 gallon	3785	7695
	9/16/2004	1.43	Bailer	1.25 gallons	4731	12426
	9/28/2004	0.57	Bailer	500 mL	500	12926
	10/11/2004	0.54	Bailer	600 mL	600	13526
	10/22/2004	0.63	Bailer	500 mL	500	14026
	11/11/2004	0.29	Bailer	200 mL	200	14226
	11/24/2004	0.2	Bailer	75 mL	75	14301
	12/8/2004	0.15	Bailer	50 mL	50	14351
	12/21/2004	0.18	Bailer	100 mL	100	14451
	1/4/2005	0.11	Bailer	500 mL	50	14501
	1/20/2005	0.11	Bailer	100 mL	100	14601
	2/1/2005	0.12	Bailer	100 mL	100	14701
	2/16/2005	0.06	Bailer	50 mL	50	14751
	3/11/2005	0.01		0	0	14751
	4/2/2005	0		0	0	No Sheen
					<b>MW-10 Total Liters Removed:</b>	<b>14.751</b>
MW-16	1/29/2004	0.51	None	0	0	0
	2/8/2004	0.51	Bailer	250 mL	250	250
	2/10/2004	0.37	Bailer	150 mL	150	400
	2/11/2004	0.29	Bailer	100 mL	100	500
	2/13/2004	Not Measured	None	0	0	500
	2/14/2004	Not Measured	None	0	0	500
	2/16/2004	Not Measured	None	0	0	500
	2/17/2004	Not Measured	None	0	0	500
	2/18/2004	Not Measured	None	0	0	500
	3/19/2004	0.19	Bailer	150 mL	150	650
	4/30/2004	0.41	Bailer	100 mL	100	750
	5/27/2004	0.08	Bailer	25 mL	25	775
	6/30/2004	0.34	Bailer	25 mL	25	800
	7/9/2004	0.24	Bailer	10 mL	10	810
	7/23/2004	0.24	Bailer	10 mL	10	820
	8/13/2004	0.28	Bailer	50 mL	50	870
	9/16/2004	0.12	Bailer	20 mL	20	890
	9/28/2004	0.13	Bailer	20 mL	20	910
	10/11/2004	0.06	None	0	0	910
	10/22/2004	0.11	Bailer	15 mL	15	925
	11/11/2004	0.04	None	0	0	925
	11/24/2004	0.02	None	0	0	925
	12/21/2004	0.03	Bailer	5 mL	5	930
					<b>MW-16 Total Liters Removed:</b>	<b>0.930</b>

TABLE 8 FACC Free Product Removal Data Summary

Well ID	Date	Product Thickness (feet)	Method of Removal	Volume Removed	Volume Removed (mL)	FP Removed to Date (mL)
MW-18	1/29/2004	5.15	?	?	0	0
	2/8/2004	4.96	Bailer	4.5 gallons	17033	17033
	2/10/2004	3.76	Bailer	3 gallons	11355	28388
	2/11/2004	3.92	Pump	3.25 gallons	12301	40689
	2/13/2004	3.86	Pump	3.25 gallons	12301	52990
	2/14/2004	4.3	Pump	4.5 gallons	17033	70023
	2/16/2004	4	Pump	3.75 gallons	14194	84217
	2/17/2004	3.8	Pump	3.5 gallons	13248	97465
	2/19/2004	3.3	Pump	3 gallons	11355	108820
	3/4/2004	Not Measured	Pump	3 gallons	11355	120175
	3/5/2004	Not Measured	Pump	1.5 gallons	5678	125853
	3/9/2004	2.96	Pump	4 gallons	15140	140993
	3/10/2004	Not Measured	Pump	1 gallon	3785	144778
	3/19/2004	2.77	Bailer	3 gallons	11355	156133
	4/30/2004	3.5	Bailer	3.75 gallons	14194	170327
	5/27/2004	4.6	Bailer	2.5 gallons	9463	179790
	6/30/2004	2.99	Bailer	1.5 gallons	5678	185468
	7/9/2004	1.75	Bailer	1.0 gallon	3785	189253
	7/23/2004	2.04	Bailer	1.0 gallon	3785	193038
	8/13/2004	1.65	Bailer	0.75 gallons	2839	195877
	9/16/2004	0.23	Bailer	100 mL	100	195977
	9/28/2004	0.02	None	0	0	195977
	10/1/2004	0.02	None	0	0	195977
	10/22/2004	0.02	None	0	0	195977
	11/1/2004	0.22	Bailer	75 mL	75	196052
	11/24/2004	0.79	Bailer	500 mL	500	196552
	12/8/2004	0.96	Bailer	600 mL	600	197152
	12/21/2004	0.91	Bailer	600 mL	600	197752
	1/4/2005	1.22	Bailer	700 mL	700	198452
	1/20/2005	0.36	Bailer	200 mL	200	198652
	2/1/2005	0.66	Bailer	350 mL	350	199002
	2/16/2005	0.58	Bailer	300 mL	300	199302
	3/11/2005	0.13	Bailer	50 mL	50	199352
	4/2/2005	0.34	Bailer	200 mL	200	199552
	4/5/2005	0.04	Skimmer	380 mL	380	199932
	4/7/2005	0.04	Skimmer	380 mL	380	200312
	4/9/2005	0.04	Skimmer	380 mL	380	200692
	4/11/2005	0.04	Skimmer	380 mL	380	201072
	4/13/2005	0.04	Skimmer	380 mL	380	201452
	4/15/2005	0.04	Skimmer	380 mL	380	201832
	4/19/2005	0.04	Skimmer	380 mL	380	202212
	4/20/2005	0.04	Skimmer	380 mL	380	202592
	4/22/2005	0.04	Skimmer	380 mL	380	202972
	4/25/2005	0.04	Skimmer	380 mL	380	203352
	4/27/2005	0.04	Skimmer	380 mL	380	203732
	4/29/2005	0.04	Skimmer	380 mL	380	204112
	5/4/2005	0.04	Skimmer	380 mL	380	204492
	5/6/2005	0.04	Skimmer	380 mL	380	204872
	5/10/2005	0.03	Skimmer	300 mL	300	205172
	5/13/2005	0.03	Skimmer	300 mL	300	205472
	5/18/2005	0.03	Skimmer	300 mL	300	205772
	5/21/2005	0.03	Skimmer	200 mL	200	205972
	5/27/2005	0.04	Skimmer	200 mL	200	206172
	6/3/2005	0.04	Skimmer	100 mL	100	206272
	6/11/2005	0.03	Skimmer	100 mL	100	206372
	6/18/2005	0.04	Skimmer	100 mL	100	206472
	6/25/2005	0.04	Skimmer	100 mL	100	206572
	7/2/2005	0.03	Skimmer	100 mL	100	206672
	7/9/2005	0.03	Skimmer	100 mL	100	206772
	7/16/2005	0.03	Skimmer	100 mL	100	206872
	7/16/2005	0.03	Skimmer	100 mL	100	206972
	7/23/2005	0.03	Skimmer	100 mL	100	207072
	7/30/2005	0.03	Skimmer	100 mL	100	207172
	8/6/2005	0.03	Skimmer	100 mL	100	207272
	8/13/2005	0.03	Skimmer	100 mL	100	207372
	8/20/2005	0.03	Skimmer	100 mL	100	207472
	8/27/2005	0.02	Skimmer	100 mL	100	207572
	9/3/2005	0.02	Skimmer	100 mL	100	207672
	9/10/2005	0.02	Skimmer	50 mL	50	207722
	9/19/2005	0.03	Skimmer	50 mL	50	207772
	10/1/2005	0.03	Skimmer	50 mL	50	207822
	10/8/2005	0.02	Skimmer	50 mL	50	207872
	10/15/2005	0.02	Skimmer	50 mL	50	207922
	10/24/2005	0.02	Skimmer	50 mL	50	207972
	10/31/2005	0.02	Skimmer	50 mL	50	208022
	11/12/2005	Sheen	Skimmer	0 mL	0	208022
	3/11/2006	Sheen	Skimmer	25mL	25	208047
	6/16/2006	Sheen	Skimmer	0	0	208047
	12/18/2007	0.65	Bailer	200mL	200	208247
	12/28/2007	0.88	Bailer	220 mL	220	208467
	3/13/2008	Sheen	Bailer	20 mL	20	208487
	6/17/2008	Sheen	Skimmer	30mL	30	208517
	9/18/2008	Sheen	Skimmer	286mL	285	208802

MW-18 Total Liters Removed: 208.802

**TABLE 8 FACC Free Product Removal Data Summary**

Well ID	Date	Product Thickness (feet)	Method of Removal	Volume Removed	Volume Removed (mL)	FP Removed to Date (mL)
MW-19	1/29/2004	1.75	?	0	0	0
	2/8/2004	0.43	Bailer	200 mL	200	200
	2/10/2004	0.7	Bailer	300 mL	300	500
	2/11/2004	0.27	Pump	100 mL	100	600
	2/13/2004	Not Measured	None	0	0	600
	2/14/2004	0.6	Pump	250 mL	250	850
	2/16/2004	0.3	Pump	100 mL	100	950
	2/17/2004	0.25	Pump	100 mL	100	1050
	2/18/2004	0.23	Pump	100 mL	100	1150
	3/19/2004	1.51	Bailer	0.75 gallons	2839	3989
	4/30/2004	2.05	Bailer	1.25 gallons	4731	8720
	5/27/2004	2.2	Bailer	1.25 gallons	4731	13451
	6/30/2004	2.04	Bailer	1 gallon	3785	17236
	7/9/2004	1.1	Bailer	0.5 gallons	1893	19129
	7/23/2004	0.77	Bailer	0.4 gallons	1514	20643
	8/13/2004	1.07	Bailer	0.5 gallons	1893	22535
	9/16/2004	1.38	Bailer	0.5 gallons	1893	24428
	9/28/2004	0.94	Bailer	400 mL	400	24828
	10/11/2004	0.75	Bailer	450 mL	450	25278
	10/22/2004	0.53	Bailer	250 mL	250	25528
	11/11/2004	0.66	Bailer	450 mL	450	25978
	11/24/2004	0.78	Bailer	500 mL	500	26478
	12/8/2004	0.88	Bailer	500 mL	500	26978
	12/21/2004	1	Bailer	600 mL	600	27578
	1/4/2005	1.05	Bailer	600 mL	600	28178
	1/20/2005	0.95	Bailer	500 mL	500	28678
	2/1/2005	0.65	Bailer	375 mL	375	29053
	2/16/2005	0.5	Bailer	300 mL	300	29353
	3/1/2005	0.35	Bailer	100 mL	100	29453
	4/2/2005	0.42	Bailer	250 mL	250	29703
	4/5/2005	0.04	Skimmer	380 mL	380	30083
	4/7/2005	0.04	Skimmer	380 mL	380	30463
	4/9/2005	0.04	Skimmer	380 mL	380	30843
	4/11/2005	0.04	Skimmer	380 mL	380	31223
	4/13/2005	0.04	Skimmer	380 mL	380	31603
	4/15/2005	0.04	Skimmer	380 mL	380	31983
	4/19/2005	0.04	Skimmer	380 mL	380	32363
	4/20/2005	0.04	Skimmer	380 mL	380	32743
	4/22/2005	0.04	Skimmer	380 mL	380	33123
	4/25/2005	0.04	Skimmer	380 mL	380	33503
	4/27/2005	0.04	Skimmer	380 mL	380	33883
	4/29/2005	0.04	Skimmer	380 mL	380	34263
	5/4/2005	0.04	Skimmer	380 mL	380	34643
	5/6/2005	0.04	Skimmer	380 mL	380	35023
	5/10/2005	0.03	Skimmer	300 mL	300	35323
	5/13/2005	0.03	Skimmer	300 mL	300	35623
	5/18/2005	0.03	Skimmer	300 mL	300	35923
	5/21/2005	0.03	Skimmer	200 mL	200	36123
	5/27/2005	0.05	Skimmer	200 mL	200	36323
	6/3/2005	0.04	Skimmer	300 mL	300	36623
	6/11/2005	0.04	Skimmer	200 mL	200	36823
	6/18/2005	0.04	Skimmer	200 mL	200	37023
	6/25/2005	0.04	Skimmer	200 mL	200	37223
	7/2/2005	0.03	Skimmer	200 mL	200	37423
	7/9/2005	0.03	Skimmer	200 mL	200	37623
	7/16/2005	0.03	Skimmer	200 mL	200	37823
	7/16/2005	0.03	Skimmer	200 mL	200	38023
	7/23/2005	0.03	Skimmer	200 mL	200	38223
	7/30/2005	0.03	Skimmer	200 mL	200	38423
	8/6/2005	0.03	Skimmer	200 mL	200	38623
	8/13/2005	0.03	Skimmer	200 mL	200	38823
	8/20/2005	0.03	Skimmer	200 mL	200	39023
	8/27/2005	0.02	Skimmer	150 mL	150	39173
	9/3/2005	0.02	Skimmer	150 mL	150	39323
	9/10/2005	0.02	Skimmer	150 mL	150	39473
	9/19/2005	0.03	Skimmer	150 mL	150	39623
	10/1/2005	0.03	Skimmer	150 mL	150	39773
	10/8/2005	0.02	Skimmer	100 mL	100	39873
	10/15/2005	0.02	Skimmer	100 mL	100	39973
	10/24/2005	0.02	Skimmer	100 mL	100	40073
	10/31/2005	0.02	Skimmer	100 mL	100	40173
	11/12/2005	0.02	Skimmer	250 mL	250	40423
	12/12/2005	0.02	Skimmer	200 mL	200	40623
	1/12/2006	0.01	Skimmer	150 mL	150	40773
	2/11/2006	0.01	Skimmer	150 mL	150	40923
	3/11/2006	0.01	Skimmer	125 mL	125	41048
	4/22/2006	Sheen	Skimmer	100ml	100	41148
	5/20/2006	Sheen	Skimmer	100 ml	100	41248
	6/16/2006	Sheen	Skimmer	60 ml	60	41308
	9/19/2006	0.05	Skimmer	40 ml	40	41348
	12/7/2006	0.01	Skimmer	25ml	25	41373
	3/19/2007	0.005	Skimmer	20 ml	20	41393
	6/27/2007	0.0005	Skimmer	30 ml	30	41423
	9/26/2007	Sheen	Skimmer	20	20	41443
	12/18/2007	Sheen	Skimmer	20	20	41463
	3/13/2008	Sheen	Skimmer	5mL	5	41468
	6/17/2008	Sheen	Skimmer	30mL	30	41498
	09/18/2008	Sheen	Skimmer	320mL	320	41818
<b>MW-19 Total Liters Removed:</b> <b>41.818</b>						
MW-21	12/8/2004	2.98	Bailer	1500 mL	1500	1500
	12/13/2004	0.22	Bailer	50 mL	50	1550
	12/21/2004	0.04	Bailer	5 mL	5	1555
	1/4/2005	0.04	None	0	0	1555
	2/1/2005	0.002	Bailer	3 mL	3	1558
	4/2/2005	0		0	0	No Sheen
<b>MW-21 Total Liters Removed:</b> <b>1.558</b>						
MW-22	2/10/2004	0.04	None	0	0	0
<b>MW-22 Total Liters Removed:</b> <b>0.000</b>						
<b>GRAND TOTAL REMOVED: <b>309.554</b> LITERS</b>						

**Table 9**

Quarter	Average of VOC Concentrations Measured <sup>*1</sup>	Averaged Flow Rate <sup>*2</sup>	Run Time <sup>*3</sup>	Molecular Weight of Vapor <sup>*4</sup>	Molar Volume of Air <sup>*5</sup>	VOCs Extracted	
	C <sub>VOC</sub>					FR	RT
	(ppmv)					(scfm)	(hours)
4th 2005	751	247	1384	103.5	358	0.0536	3.22
1st 2006	580	222	1791	103.5	358	0.0372	2.23
2nd 2006	405	262	1757	103.5	358	0.0307	1.84
3rd 2006	295	276	1888	103.5	358	0.0235	1.41
4th 2006	124	257	1501	103.5	358	0.00919	0.551
							<b>4455</b>
							<b>3996</b>
							<b>3238</b>
							<b>2661</b>
							<b>828</b>

**Total Mass (lbs) of VOCs Extracted by Thermal Oxidizer Based SVE System 15,178**

<sup>\*6</sup>

1st 2007	<b>system down</b>						
2nd 2007	<b>system down</b>						
3rd 2007	<b>system down</b>						
4th 2007	330	170	1402	125.7	358	0.01972	1.183
1st 2008	227	191	1560	125.7	358	0.01520	0.912
2nd 2008	13	120	96	125.7	358	0.00053	0.032
3rd 2008	10	120	2232	125.7	358	0.00042	0.025
							<b>1659</b>
							<b>1422</b>
							<b>3</b>
							<b>56</b>

**Total Mass (lbs) of VOCs Extracted by Carbon Based SVE System 3,141**

**Notes**

- \*1 Averaged VOC Concentration (VOCC) = Average of PID values measured during the quarter
- \*2 Averaged Flow Rate (FR) = Calculated flow rate of SVE system (In CFM) averaged over the quarter
- \*3 Run Time (RT) = Total number of hours as recorded from monitoring logs for the quarter.
- \*4 Avg Molecular weight of VOC vapor (MwV) in pounds per pound-mole based on Jan 22, Feb 17 and March 9th, 2006 samples
- \*5 Molar Volume of Air (MvA) = 358 cubic foot per pound-mole of Air at STP
- \*6 Avg Molecular weight of VOC vapor (MwV) in pounds per pound-mole based on Oct 12 and Nov 12, 2007 samples

**Formulas Used for Extraction Calculation**

$$\text{VOCC} \times \text{FR} \times \text{MwV} / \text{MvA} \times 1,000,000 = \text{VOC Rate (lbs/min)}$$

$$\text{VOC Rate (lb/hr)} \times \text{RT} = \text{VOC (lbs/Quarter)}$$

**APPENDIX A**

**FIELD SAMPLING LOGS**

# WELL GAUGING DATA

CLEAN SOIL INC.

DATE: 09-18-2008

PAGE 1 of 2

SITE: FORMER ANGELES CHEMICAL FACILITY

TECHNICIAN MS/AW

SITE ADDRESS: 8915 SORENSEN AVE. SANTA FE SPRINGS, CA.

WELL ID.	WELL SIZE	TIME	SHEEN/ ODOR	DEPTH TO IMMISSIBLES	THICKNESS OF LAYER	DEPTH TO WATER	DEPTH TO WELL BOTTOM
MW-4	4"	—	—	—	—	—	—
MW-6	4"	—	—	—	—	—	—
MW-8	4"	1027	Ø	Ø	Ø	36.50	40.40
MW-9	4"	0740	Ø	Ø	Ø	38.35	45.80
MW-10	4"	0916	Ø	Ø	Ø	36.32	40.75
MW-11	2"	1100	odor	Ø	Ø	36.15	40.0
MW-12	2"	1500	Ø	Ø	Ø	36.95	46.00
MW-13	2"	1420	Ø	Ø	Ø	48.84	62.45
MW-14	2"	1119	Ø	Ø	Ø	49.60	63.0
MW-15	2"	1152	Ø	Ø	Ø	50.95	64.65

H<sub>2</sub>O  
Column  
↓

## WELL GAUGING DATA

CLEAN SOIL INC.

DATE: 09-18-2008

PAGE 2 of 2

SITE: FORMER ANGELES CHEMICAL FACILITY

TECHNICIAN M.A. Sletten

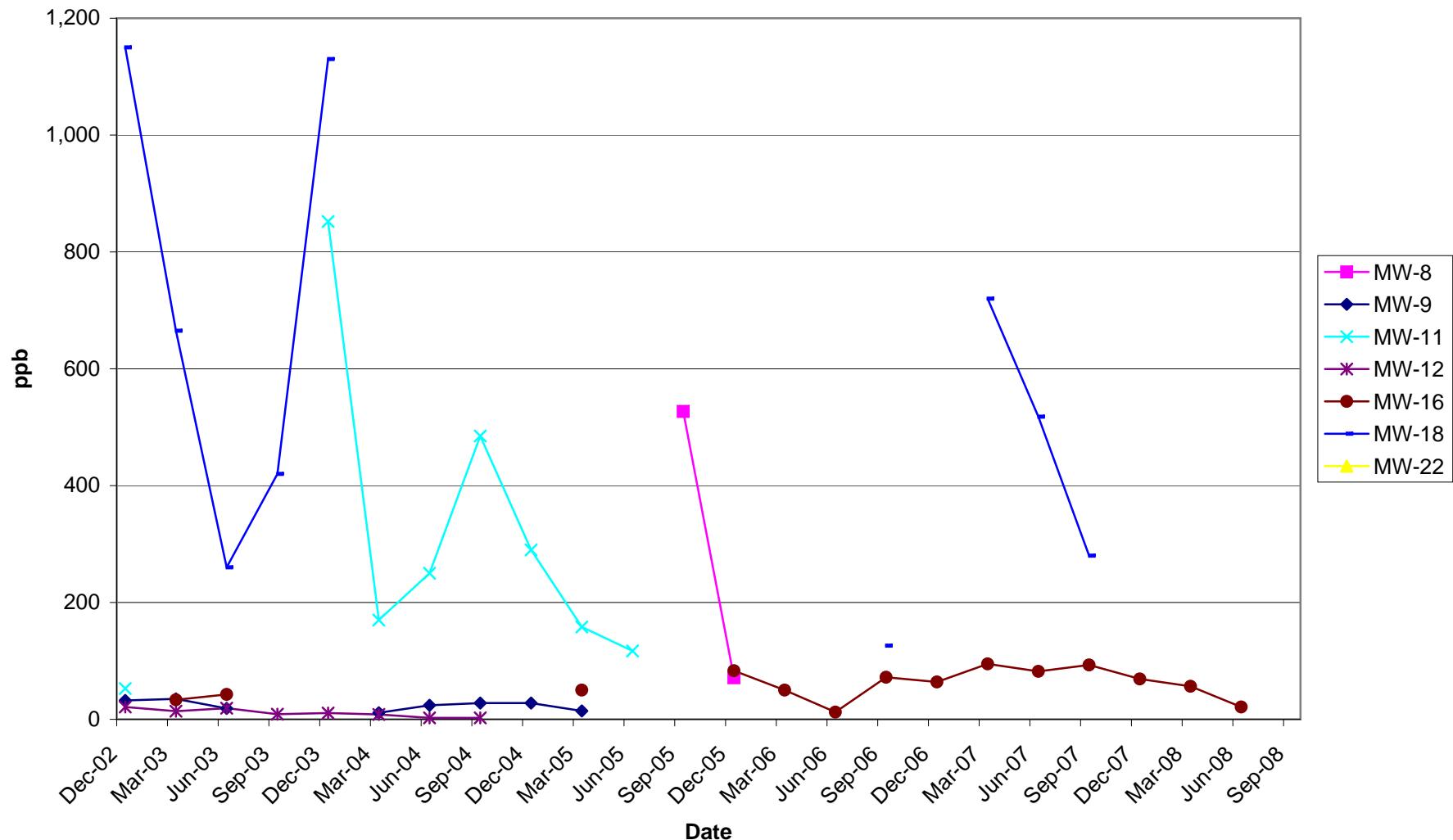
SITE ADDRESS: 8915 SORENSEN AVE. SANTA FE SPRINGS, CA

WELL ID.	WELL SIZE	TIME	SHEEN/ ODOR	DEPTH TO IMMISSIBLES	THICKNESS OF LAYER	DEPTH TO WATER	DEPTH TO WELL BOTTOM
MW-16	2"	0900	Ø	Ø	Ø	38.34	64.0 25.66 <sup>H2O column</sup> ↓
MW-17	2"	0820	Ø	Ø	Ø	47.70	66.10 18.40
MW-18	2"	1350	Sheen	→	→	44.00	46.25 2.25
MW-19	2"	1120	Sheen	→	→	39.05	45.0? 5.95
MW-20	2"	1040	Ø	Ø	Ø	41.51 <del>40.00 mts</del>	67.00 <del>42.00 mts</del> 18.49 <del>2.00 mts</del>
MW-21	2"	1400	Ø	Ø	Ø	49.56	63.08 13.52
MW-22	2"	1142	Ø	Ø	Ø	40.00	42.00 2.00
MW-23	4"	0840	Ø	Ø	Ø	46.35	79.8 33.45
MW-24	4"	1342	Ø	Ø	Ø	49.25	78.5 29.25
MW-25	4"	1325	Ø	Ø	Ø	51.00	81.00 30.00
MW-26	2"	NA	—	—	—	—	—

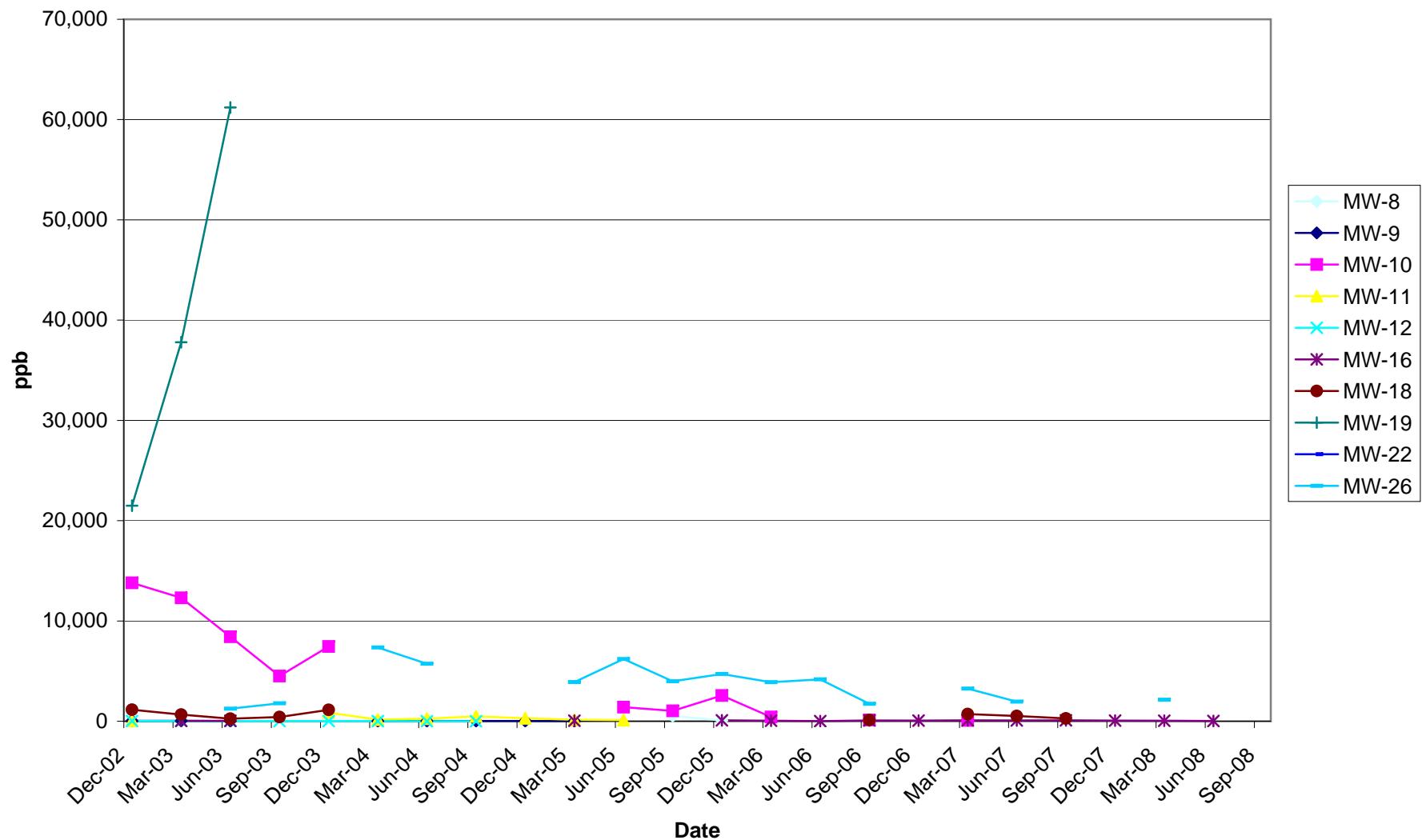
## **APPENDIX B**

## **CONTAMINANT GRAPHS**

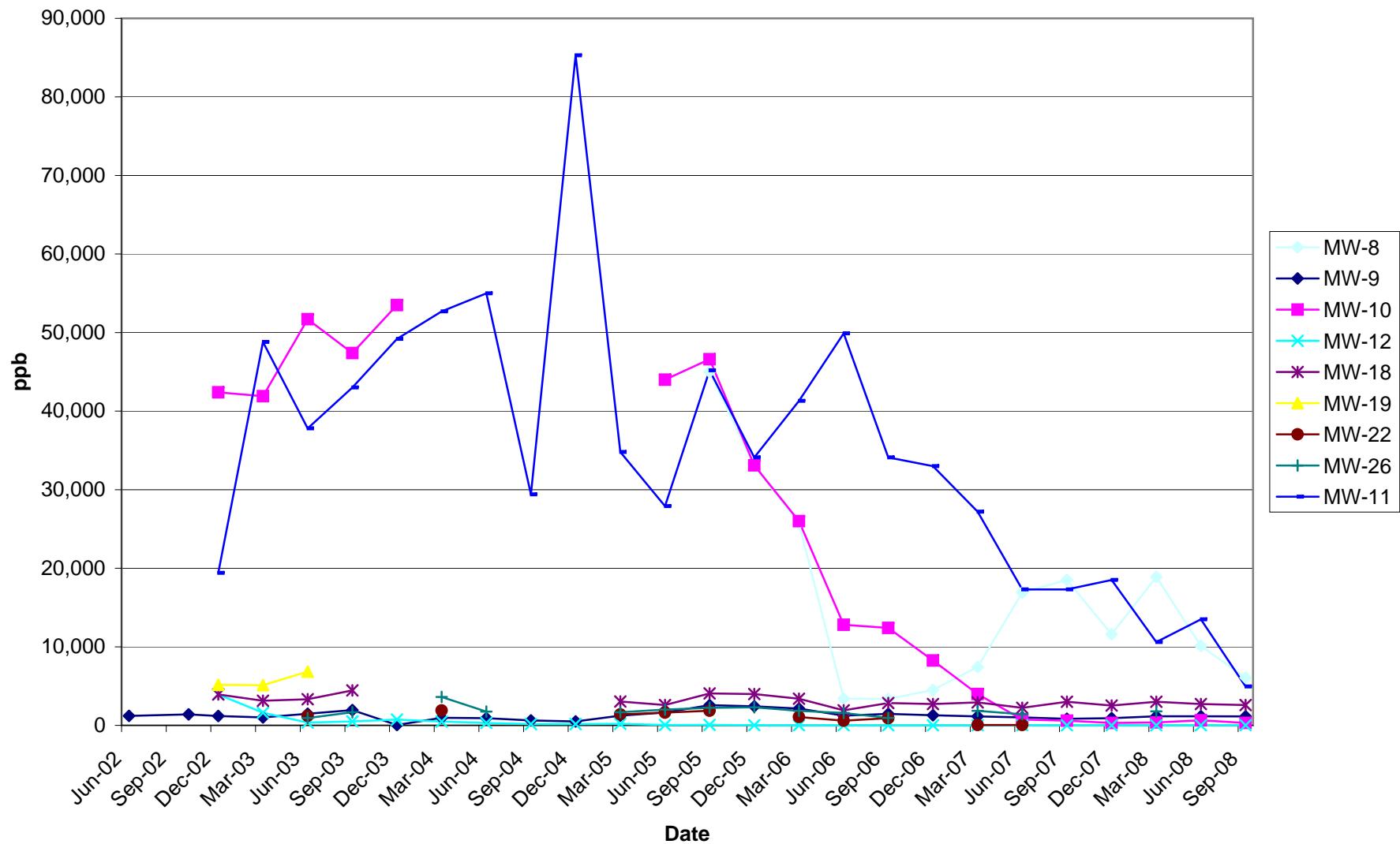
**Dissolved 1,1,1-TCA in 1st Water Wells**  
**(excluding MW-10, MW-19 and MW-26 for smaller scale)**



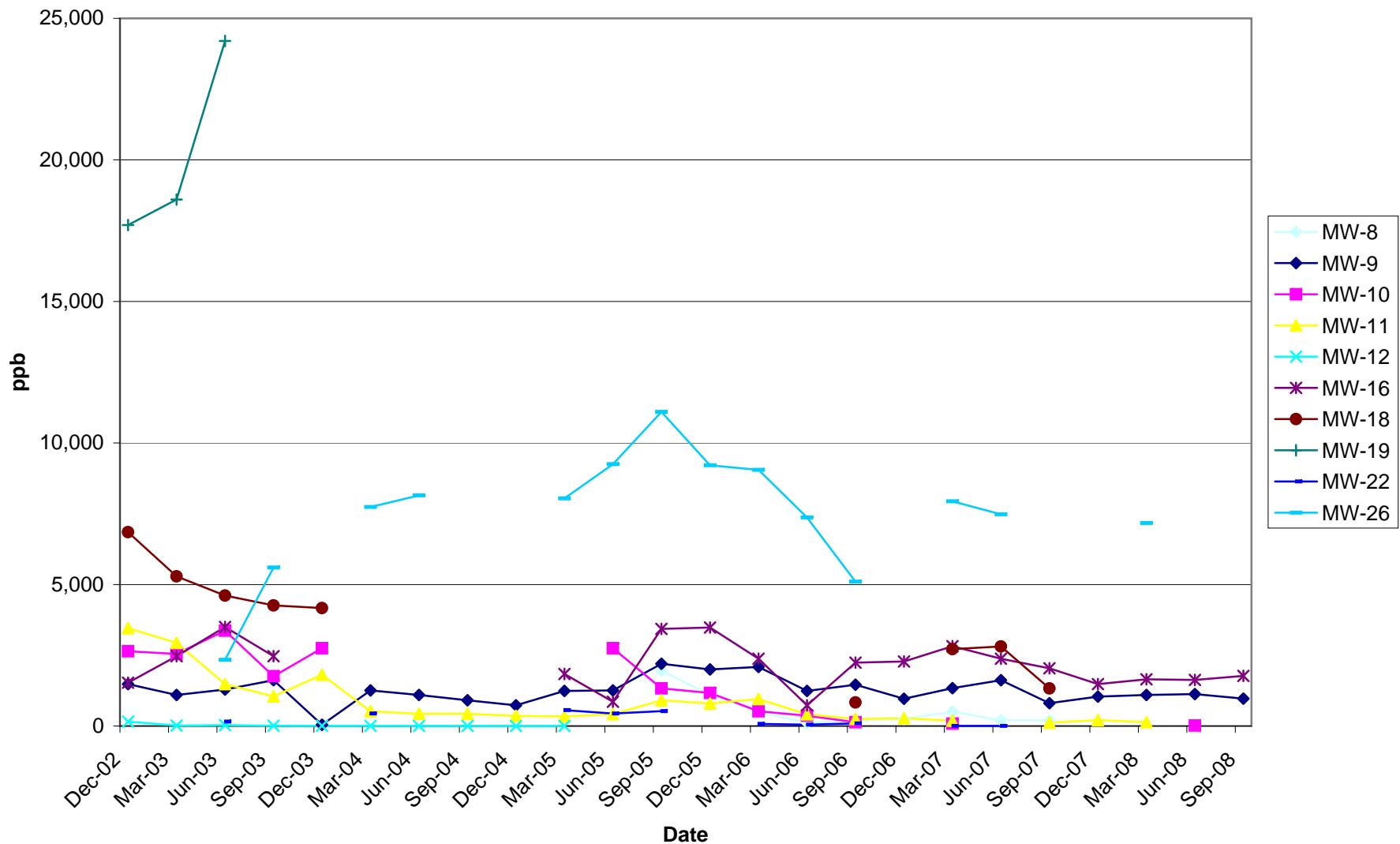
## Dissolved 1,1,1-TCA in 1st Water Wells



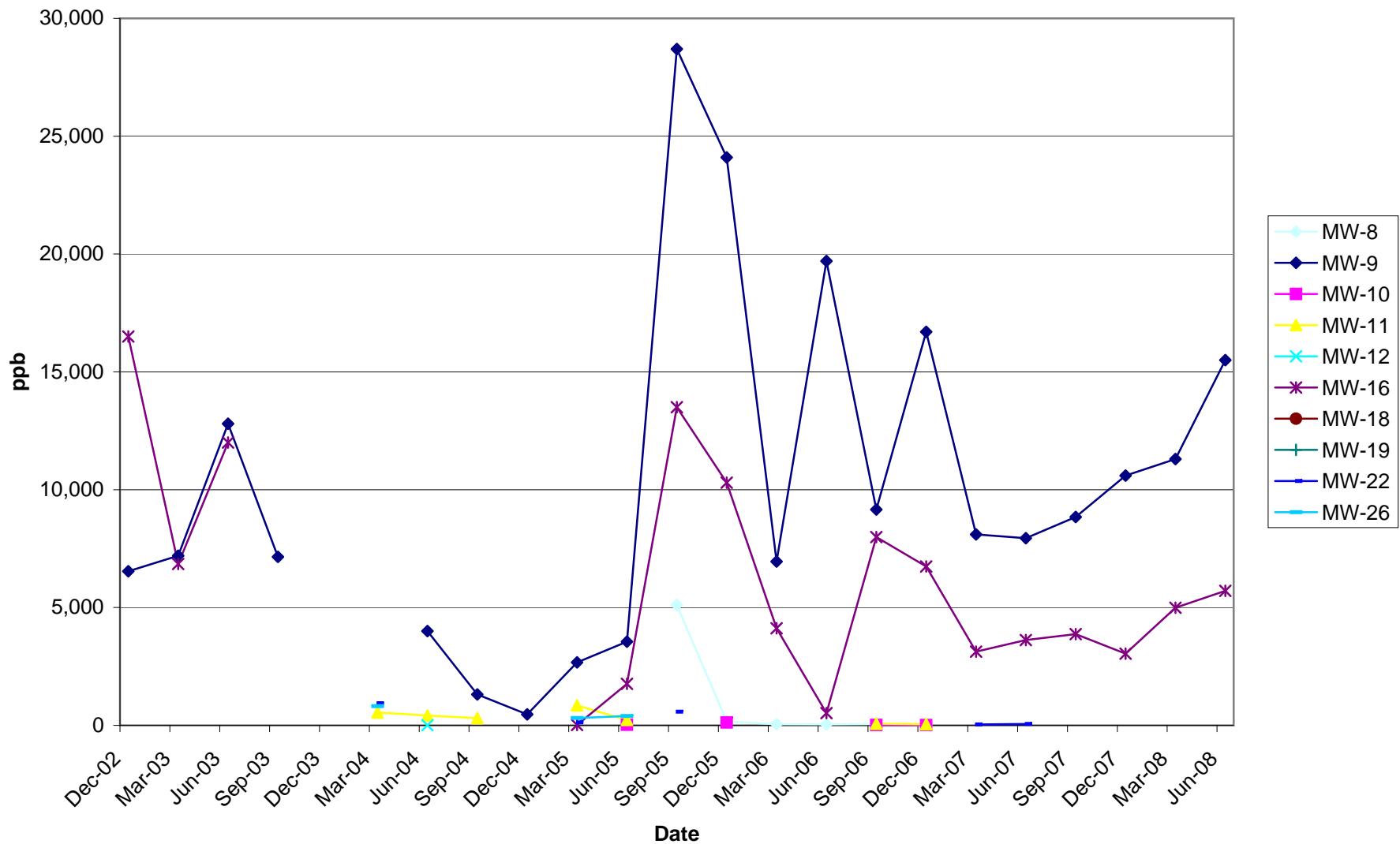
## Dissolved 1,1-DCA in 1st Water Wells



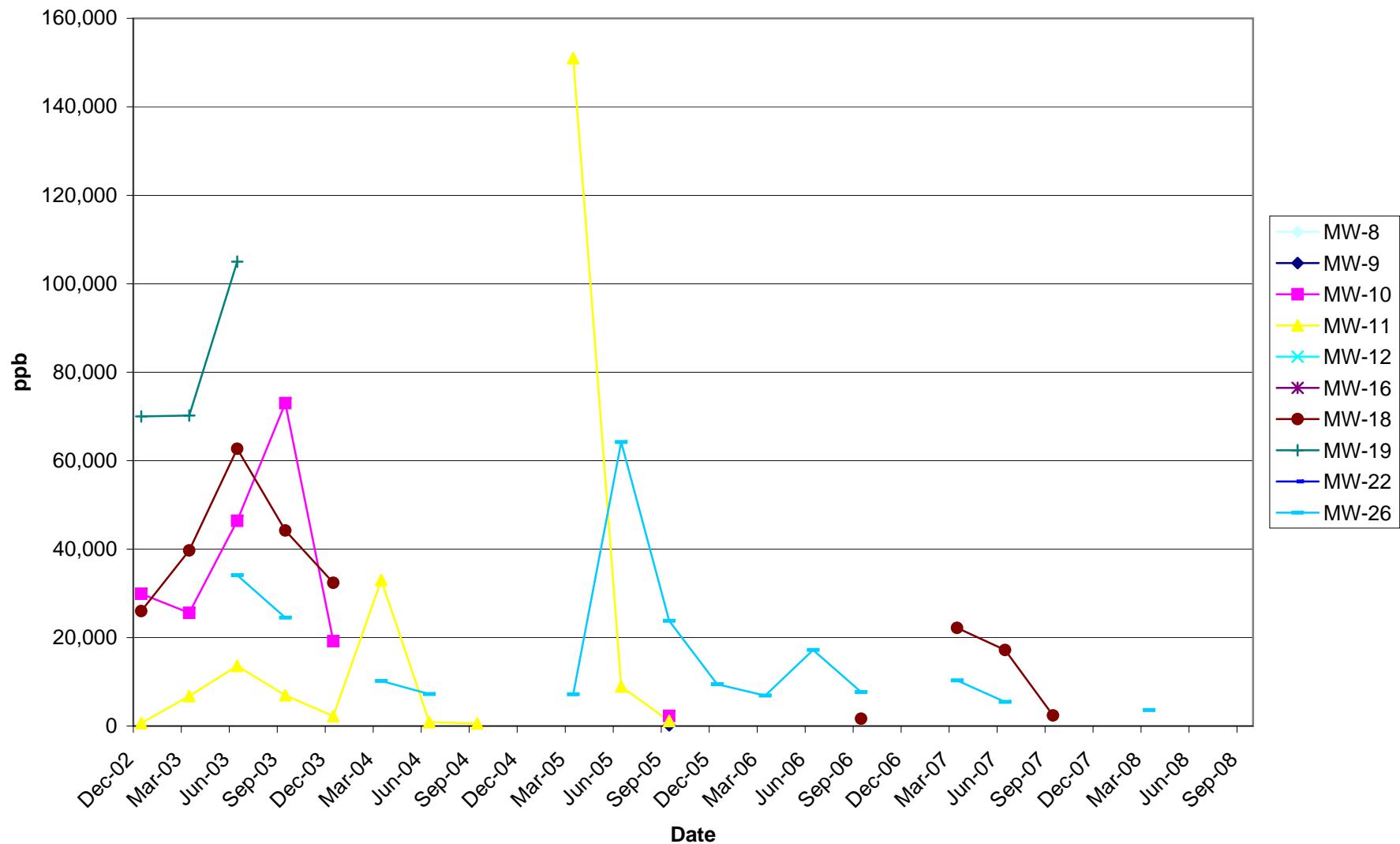
## Dissolved 1,1-DCE in 1st Water Wells



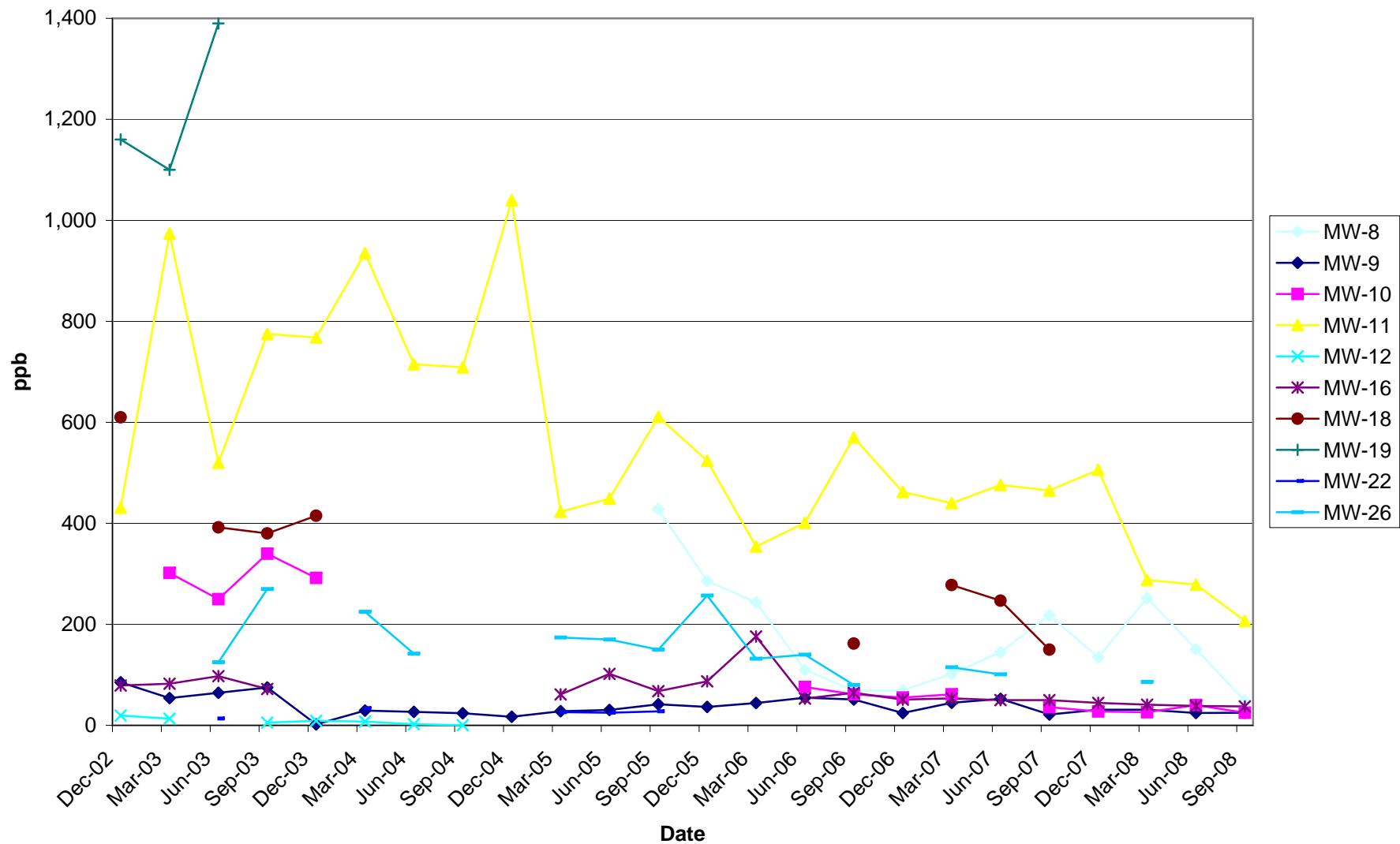
### Dissolved 1,4-Dioxane in 1st Water Wells



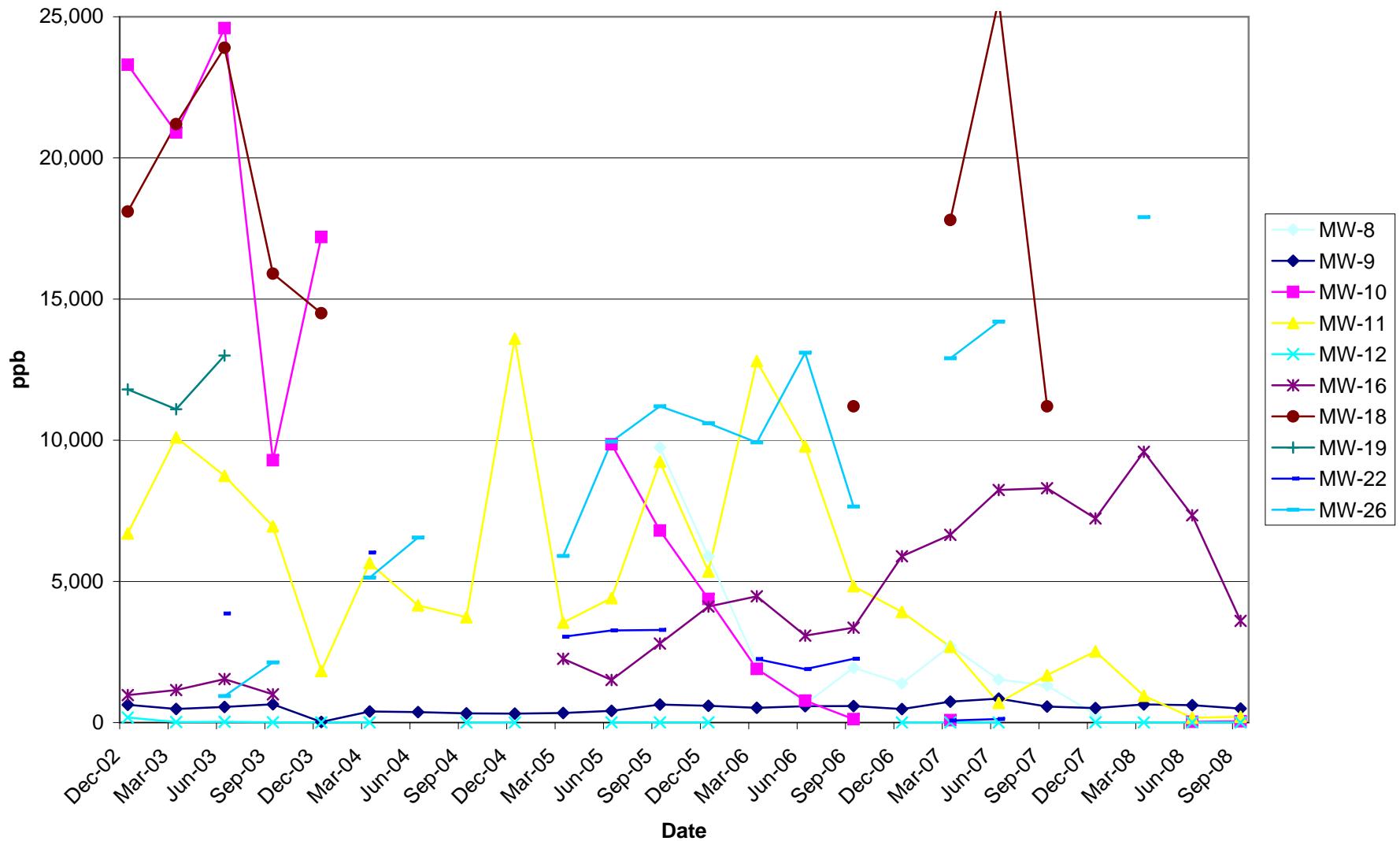
## Dissolved Acetone in 1st Water Wells



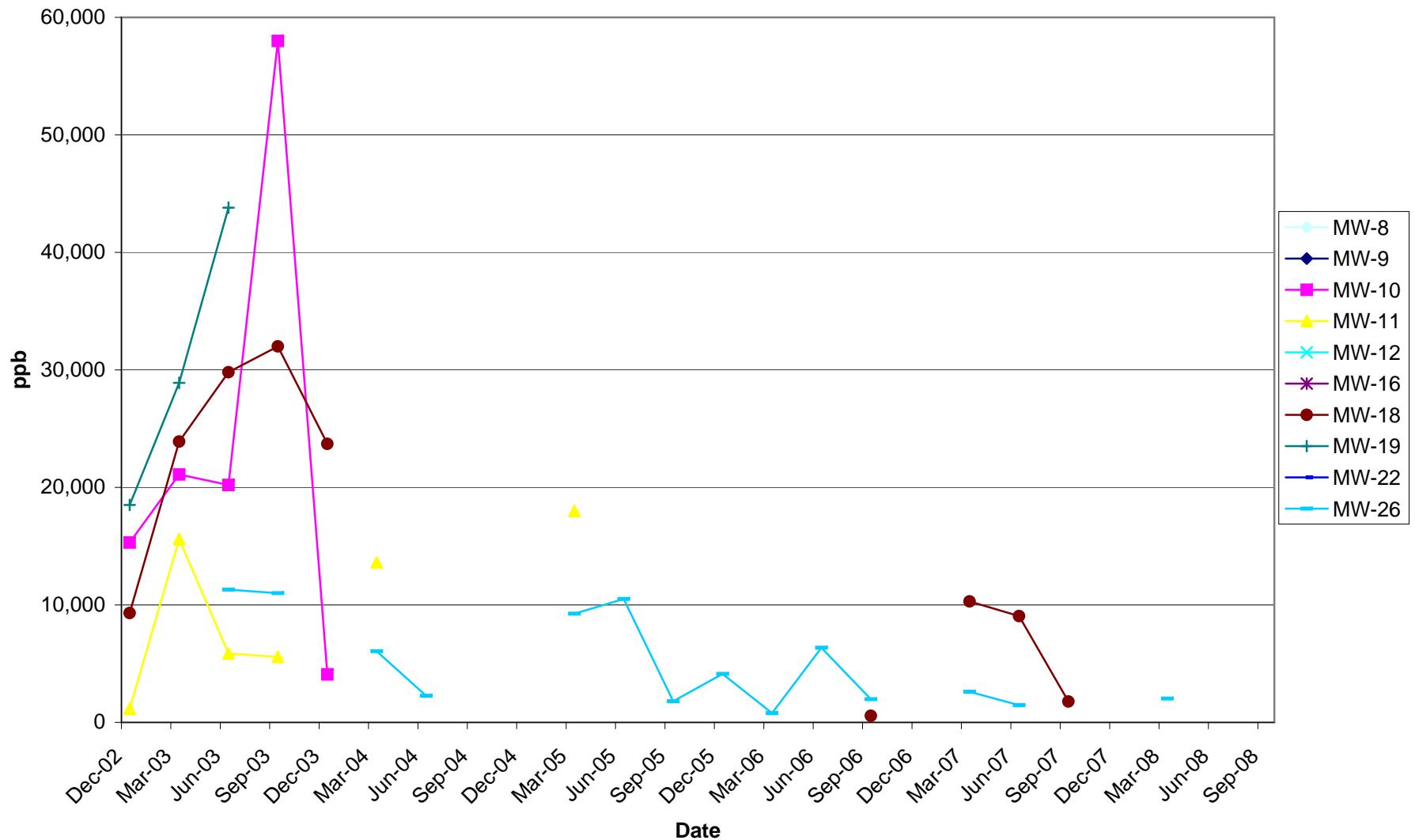
## Dissolved Benzene in 1st Water Wells



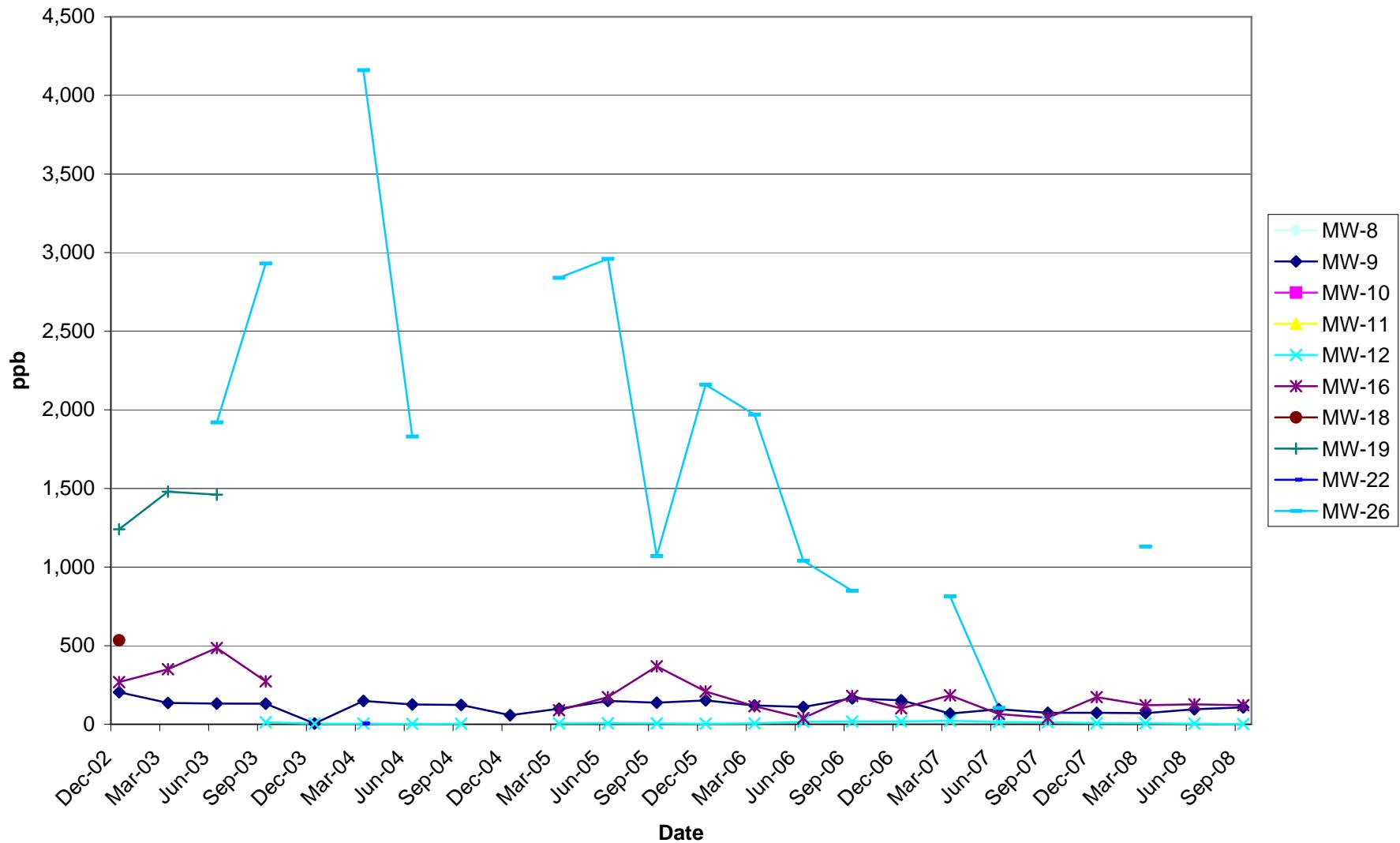
### Dissolved Cis-1,2-DCE in 1st Water Wells



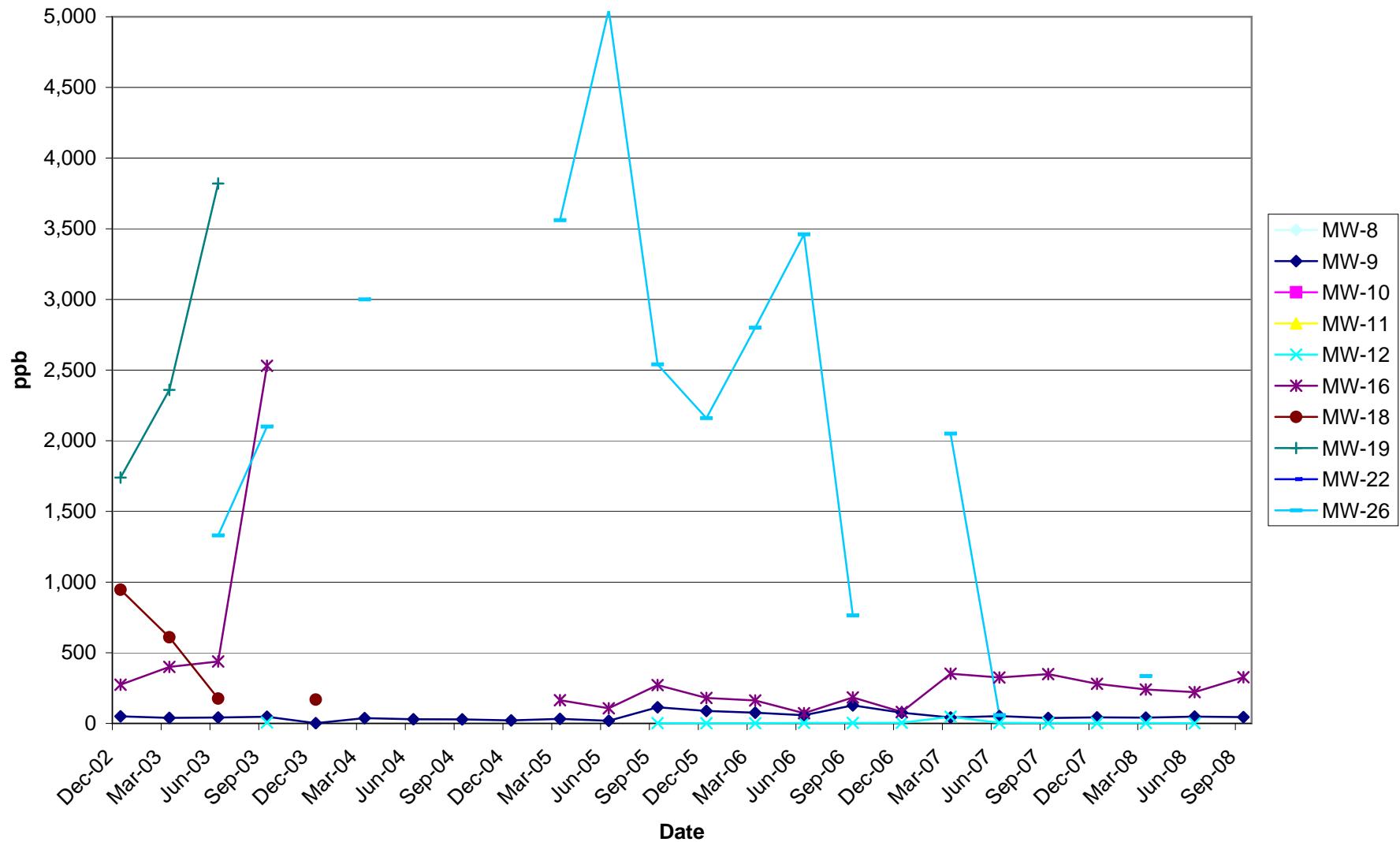
### Dissolved MEK in 1st Water Wells



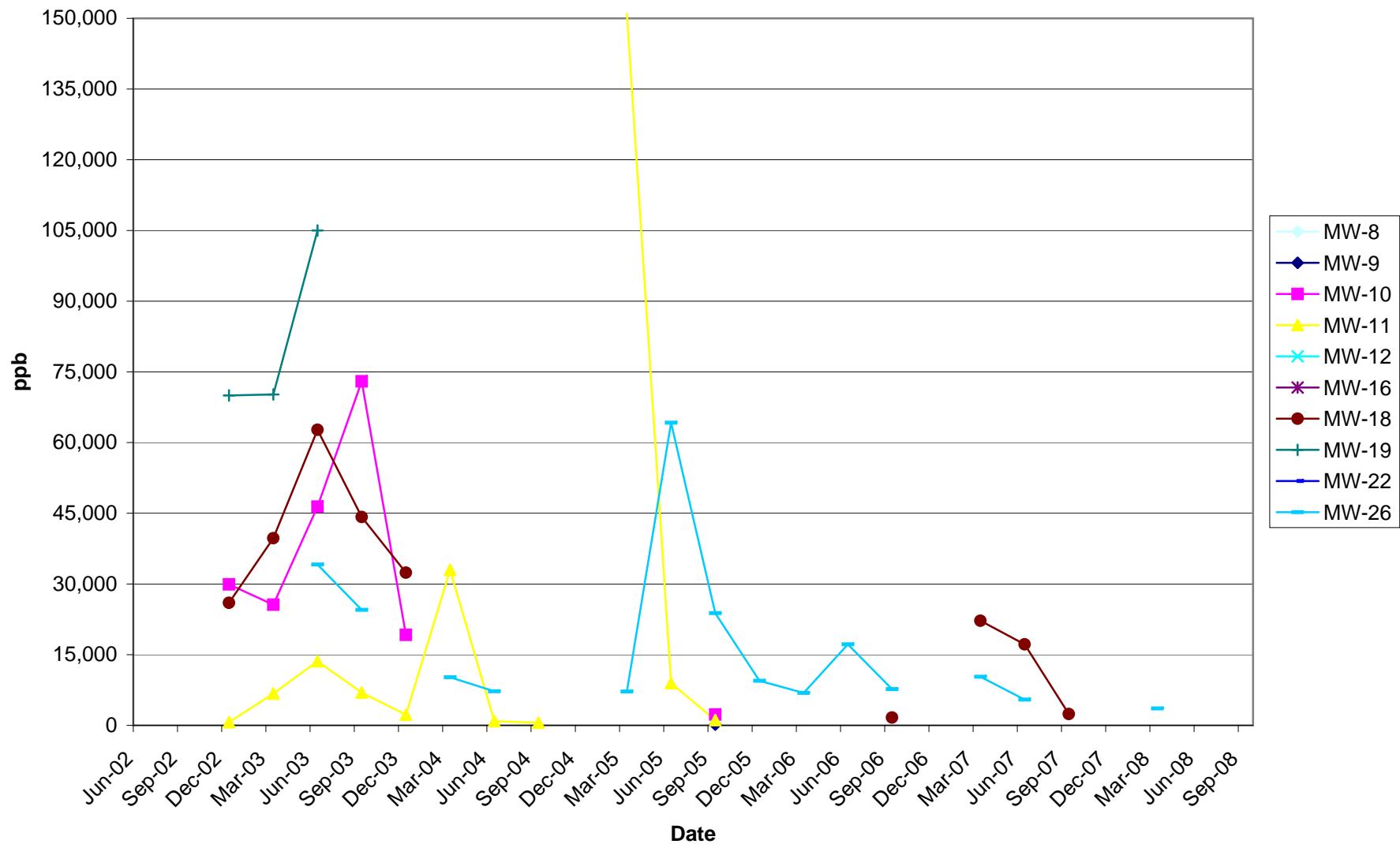
## Dissolved PCE in 1st Water Wells



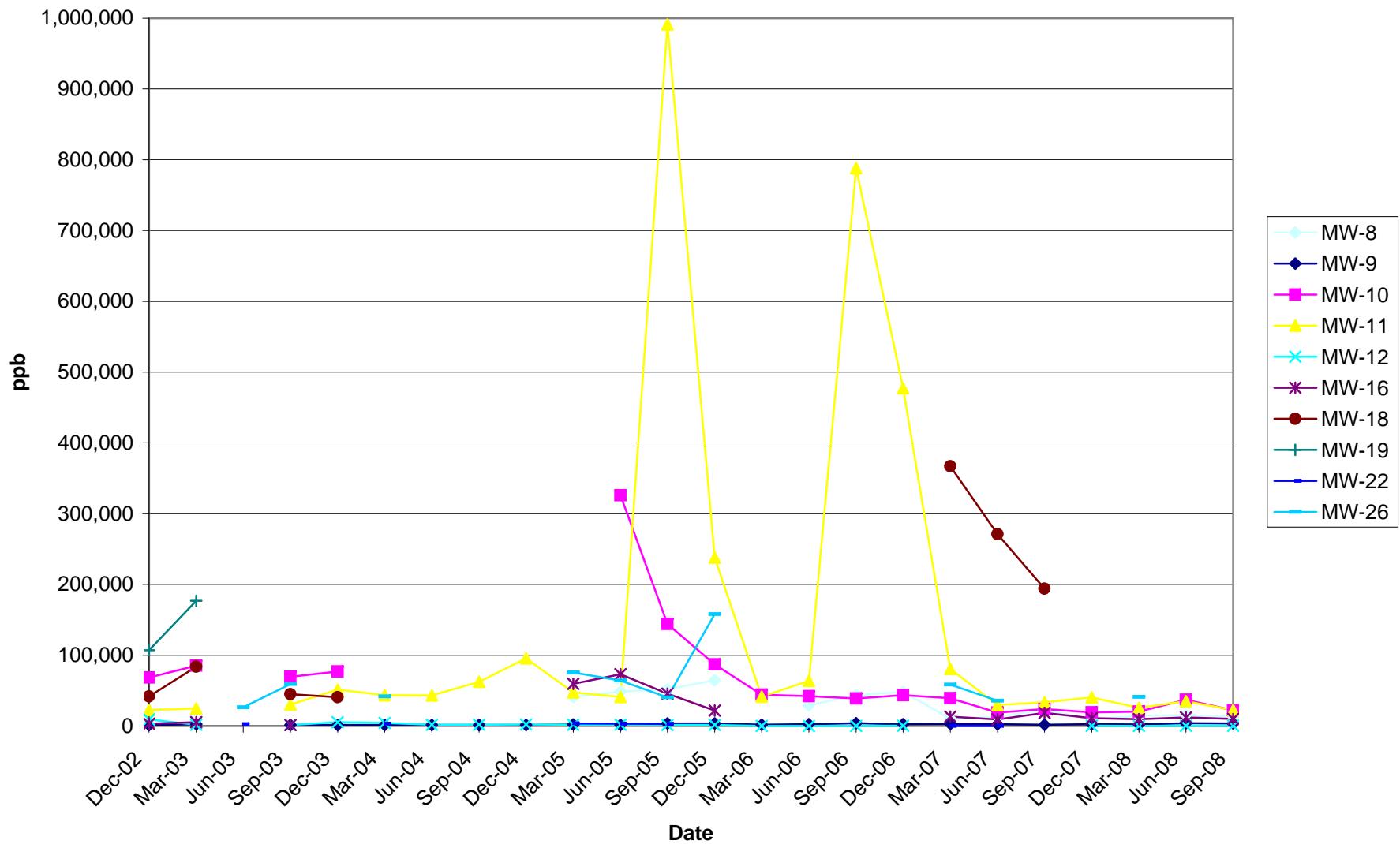
### Dissolved TCE in 1st Water Wells



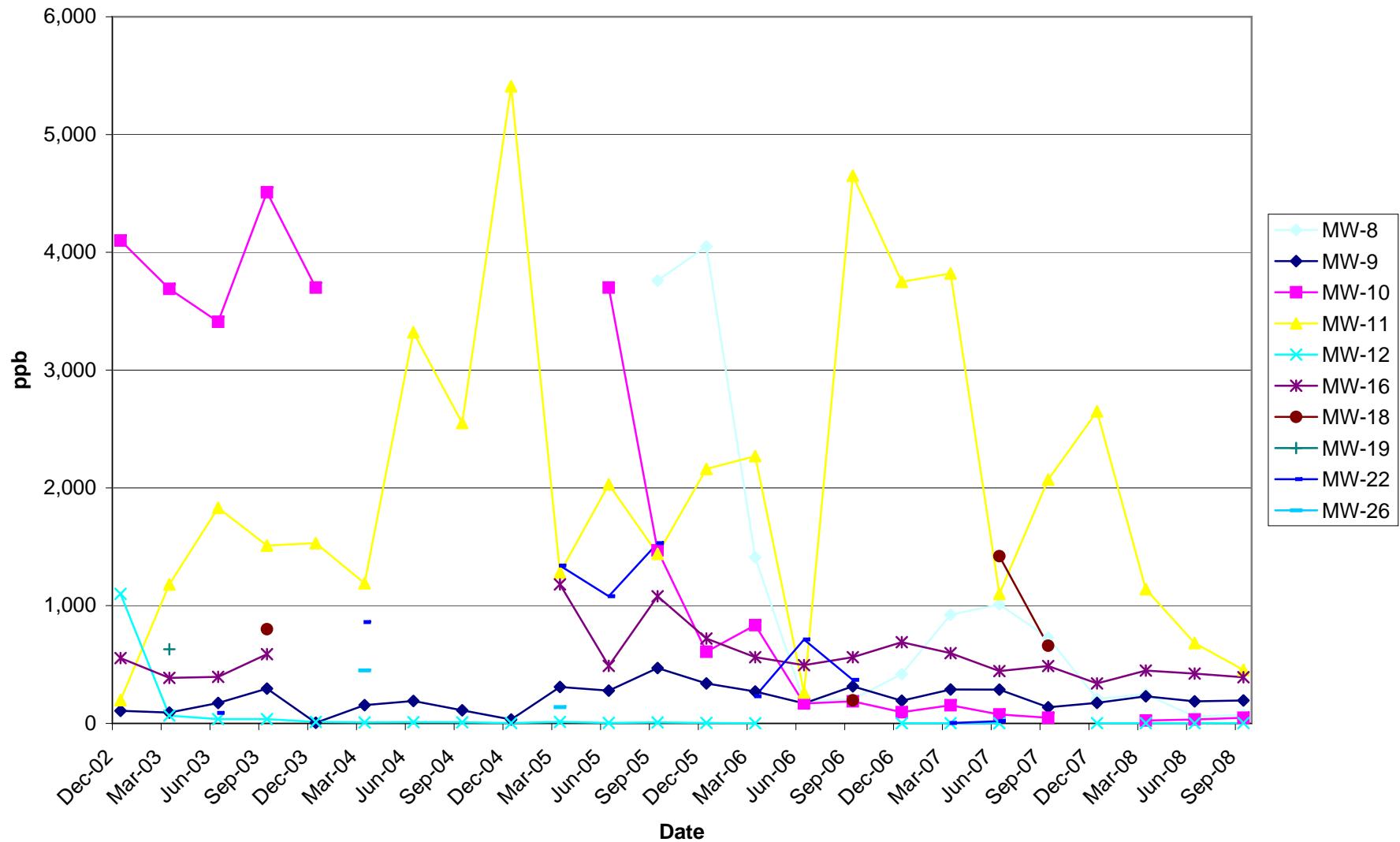
## Dissolved Toluene in 1st Water Wells



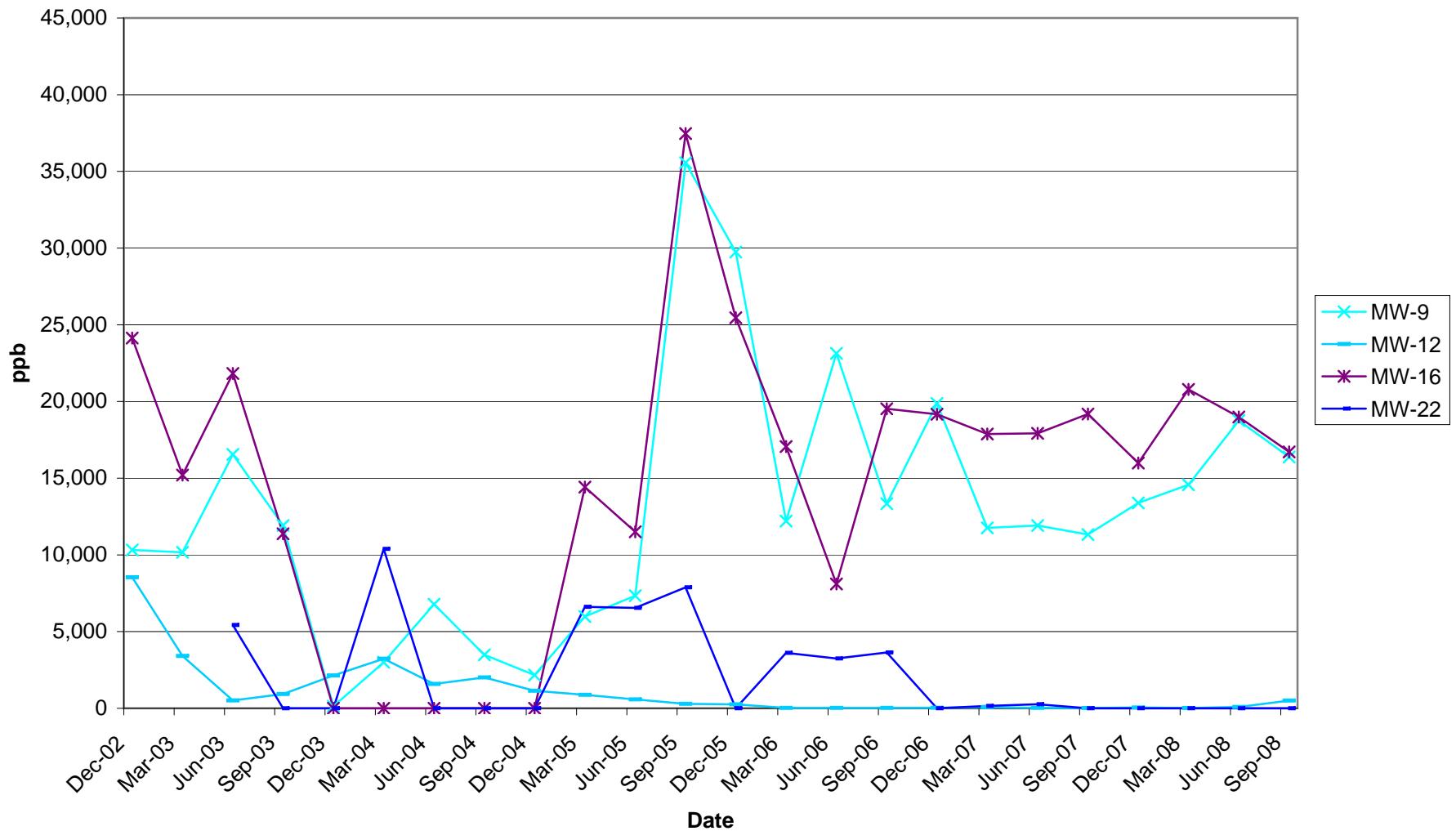
### Dissolved TPH-gas in 1st Water Wells



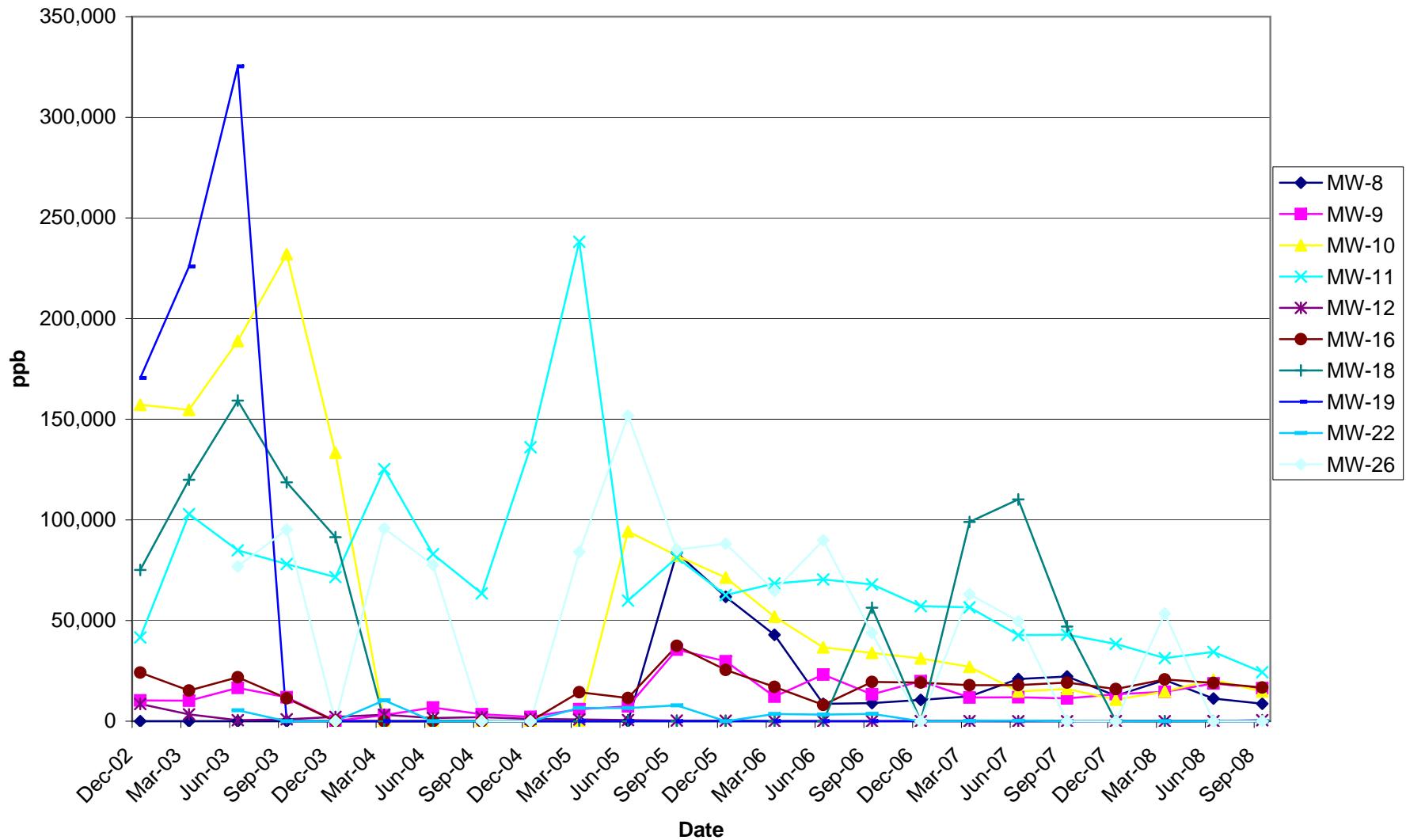
## Dissolved Vinyl Chloride in 1st Water



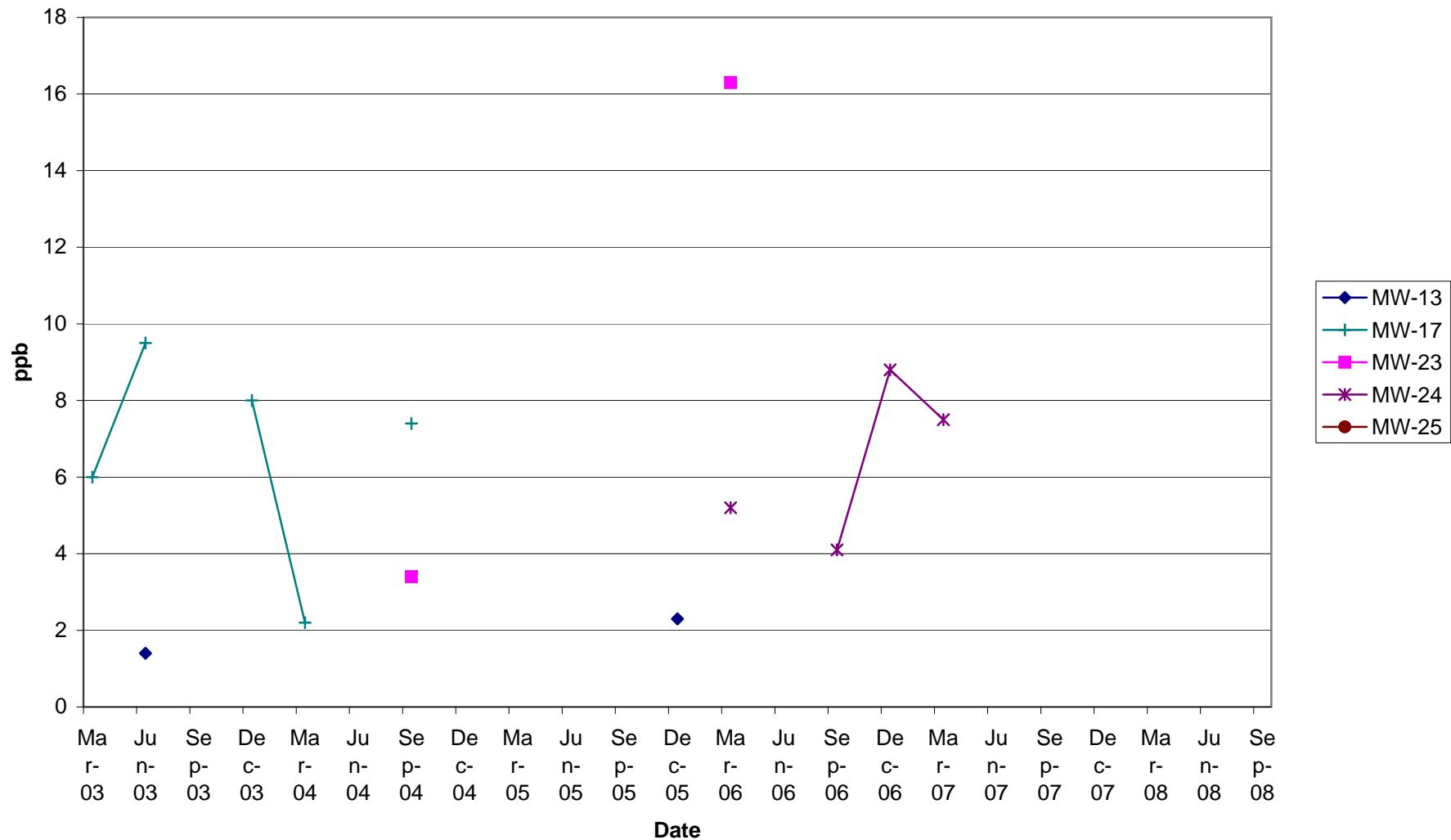
**Total Dissolved VOCs in 1st Water Wells**  
**(excluding MW-8, MW-10, MW-11, MW-18, MW-19 and MW-26)**



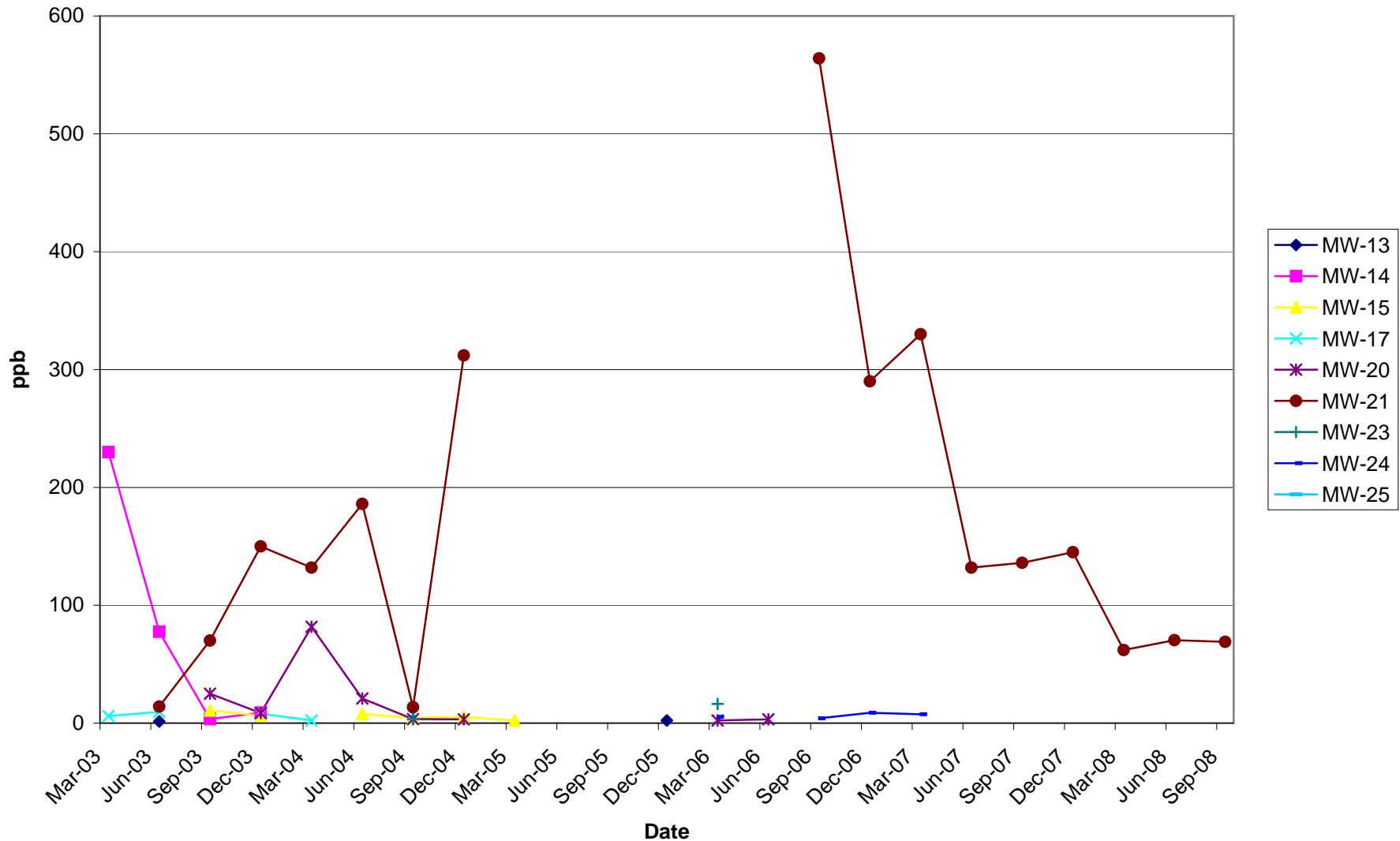
## Total Dissolved VOCs in 1st Water Wells



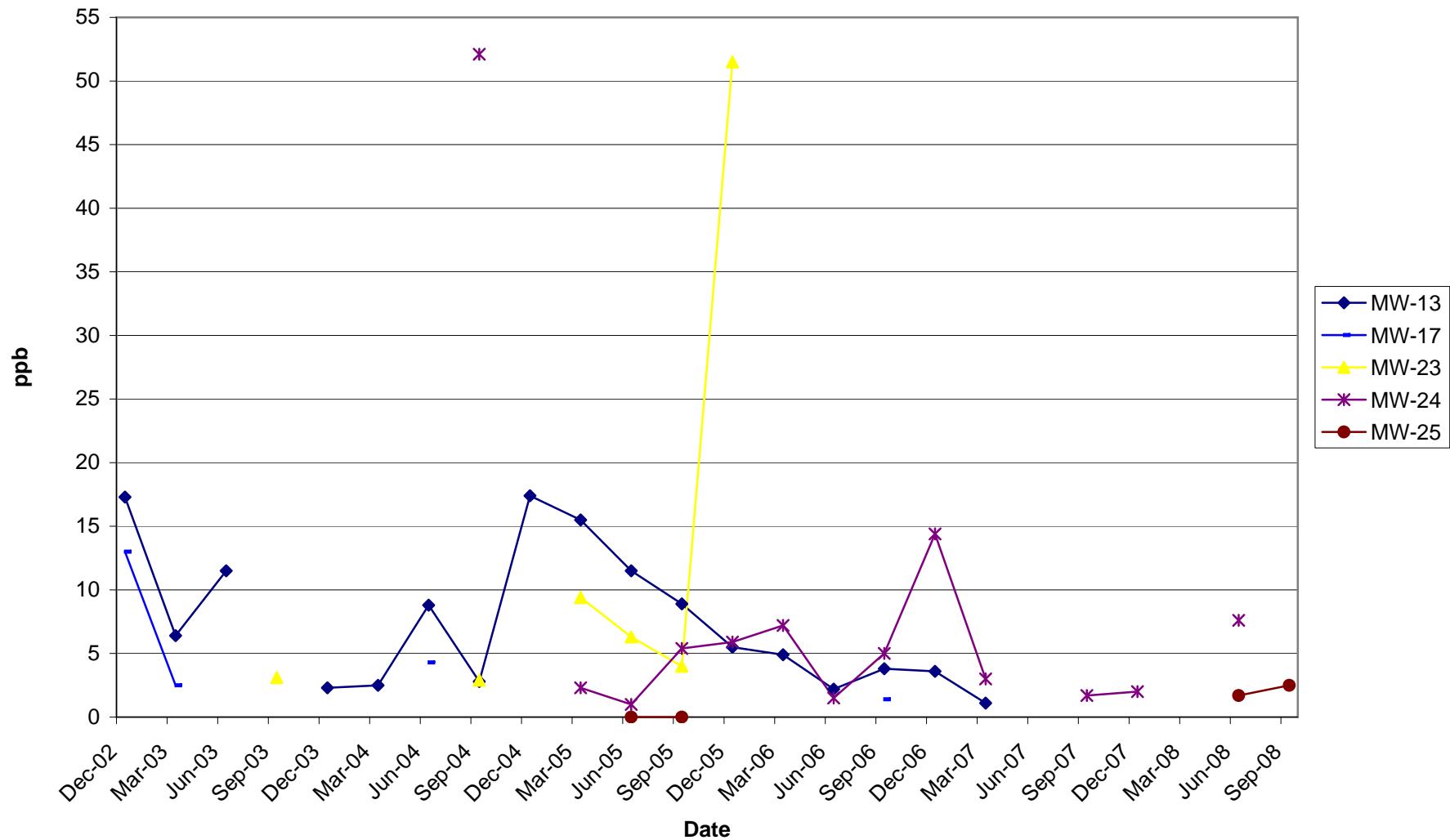
**Dissolved 1,1,1-TCA in A1 Wells**  
**(excluding MW-14, MW-20 and MW-21 for smaller scale)**



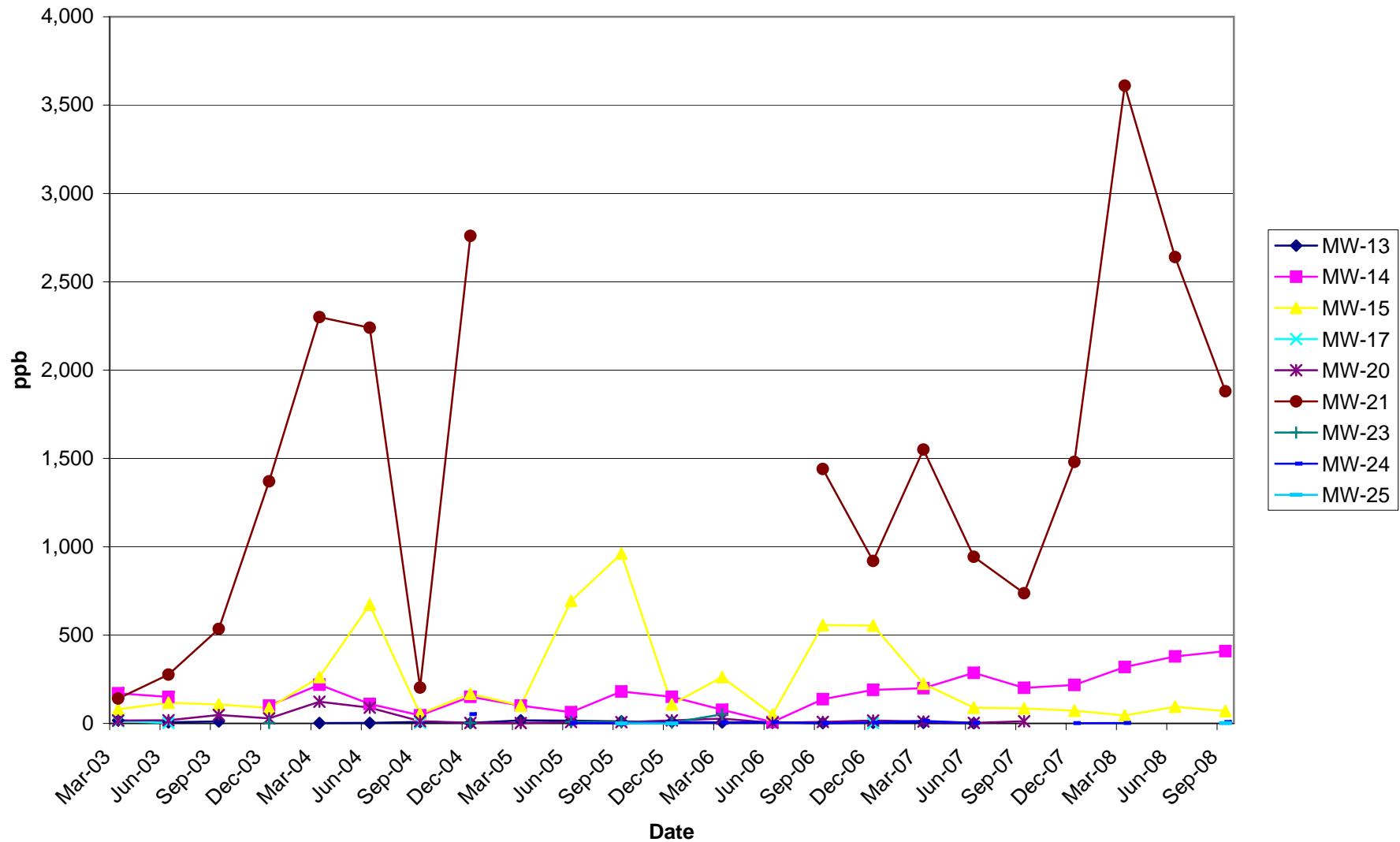
### Dissolved 1,1,1-TCA in A1 Wells



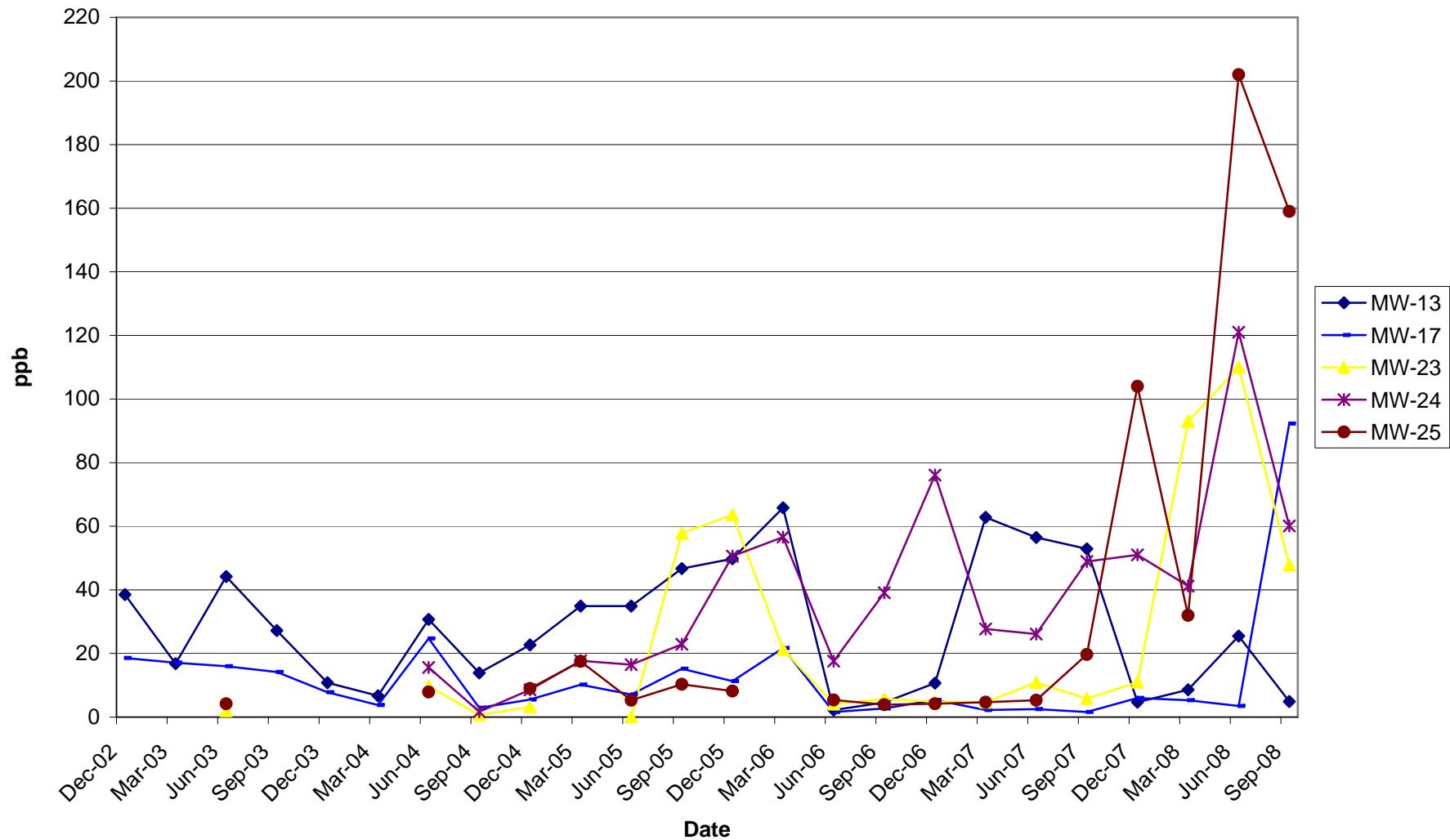
**Dissolved 1,1-DCA in A1 Wells**  
**(excluding MW-14, MW-15, MW-20 and MW-21 for smaller scale)**



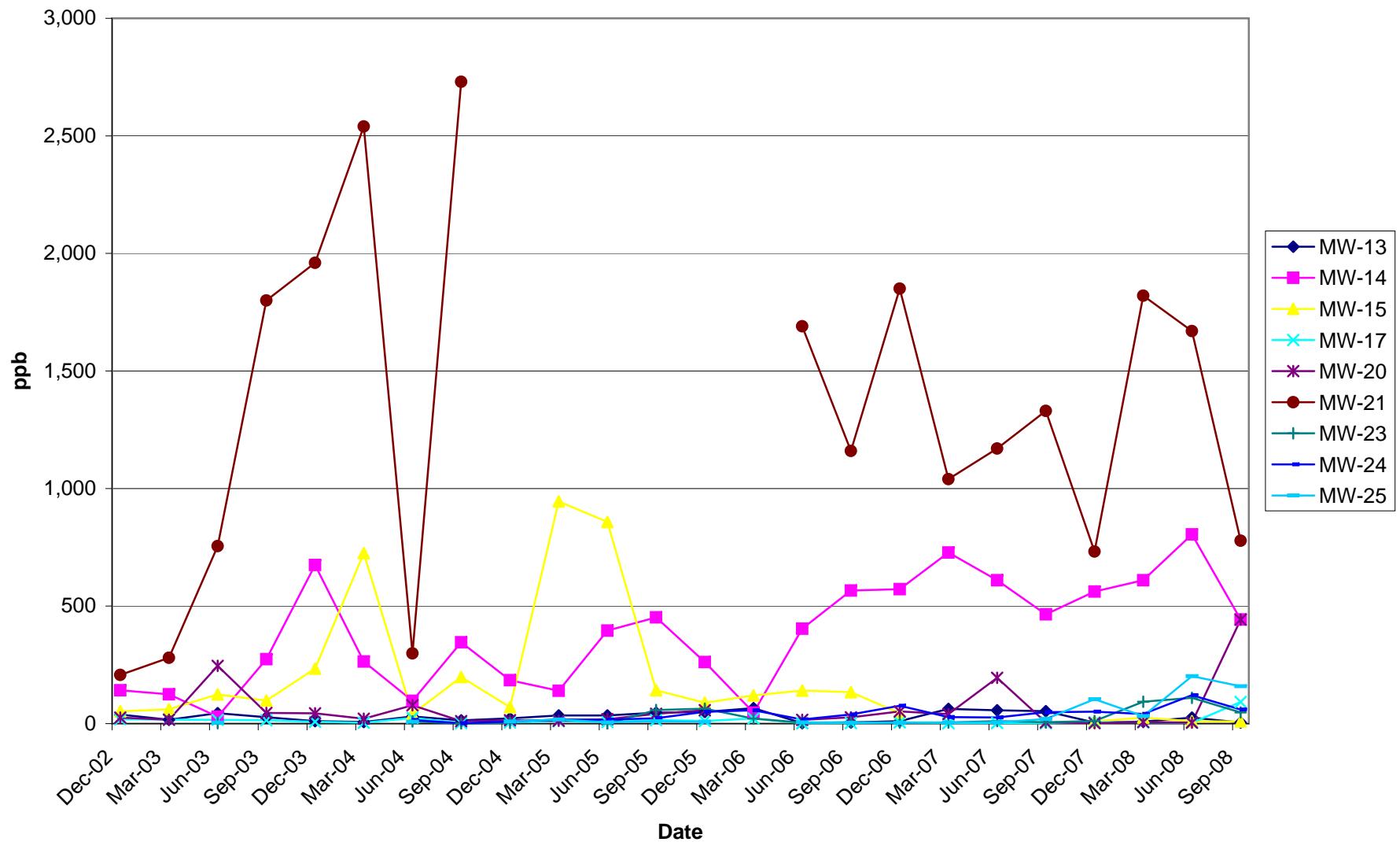
### Dissolved 1,1-DCA in A1 Wells



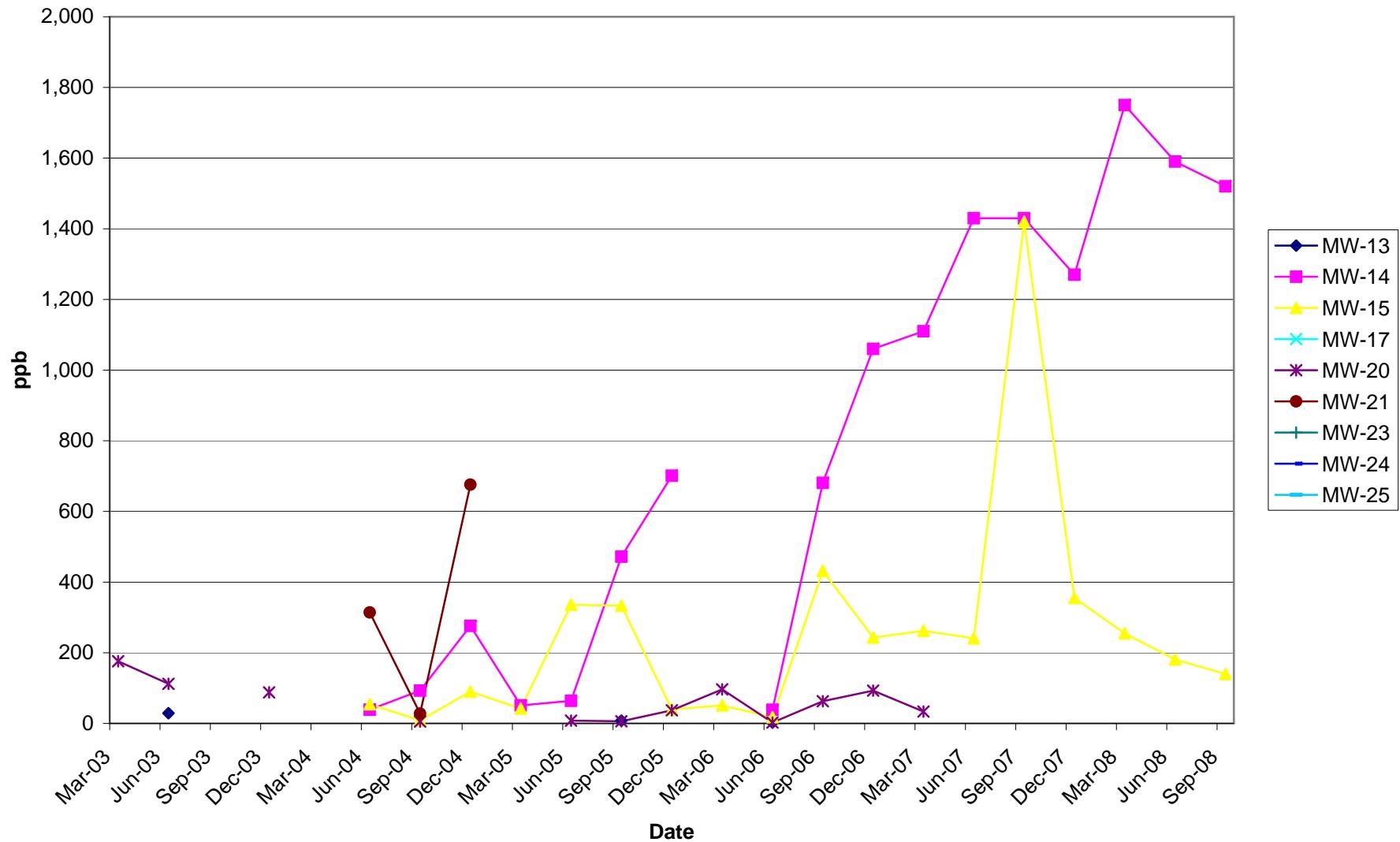
**Dissolved 1,1-DCE in A1 Wells**  
**(excluding MW-14, MW-15, MW-20 and MW-21 for smaller scale)**



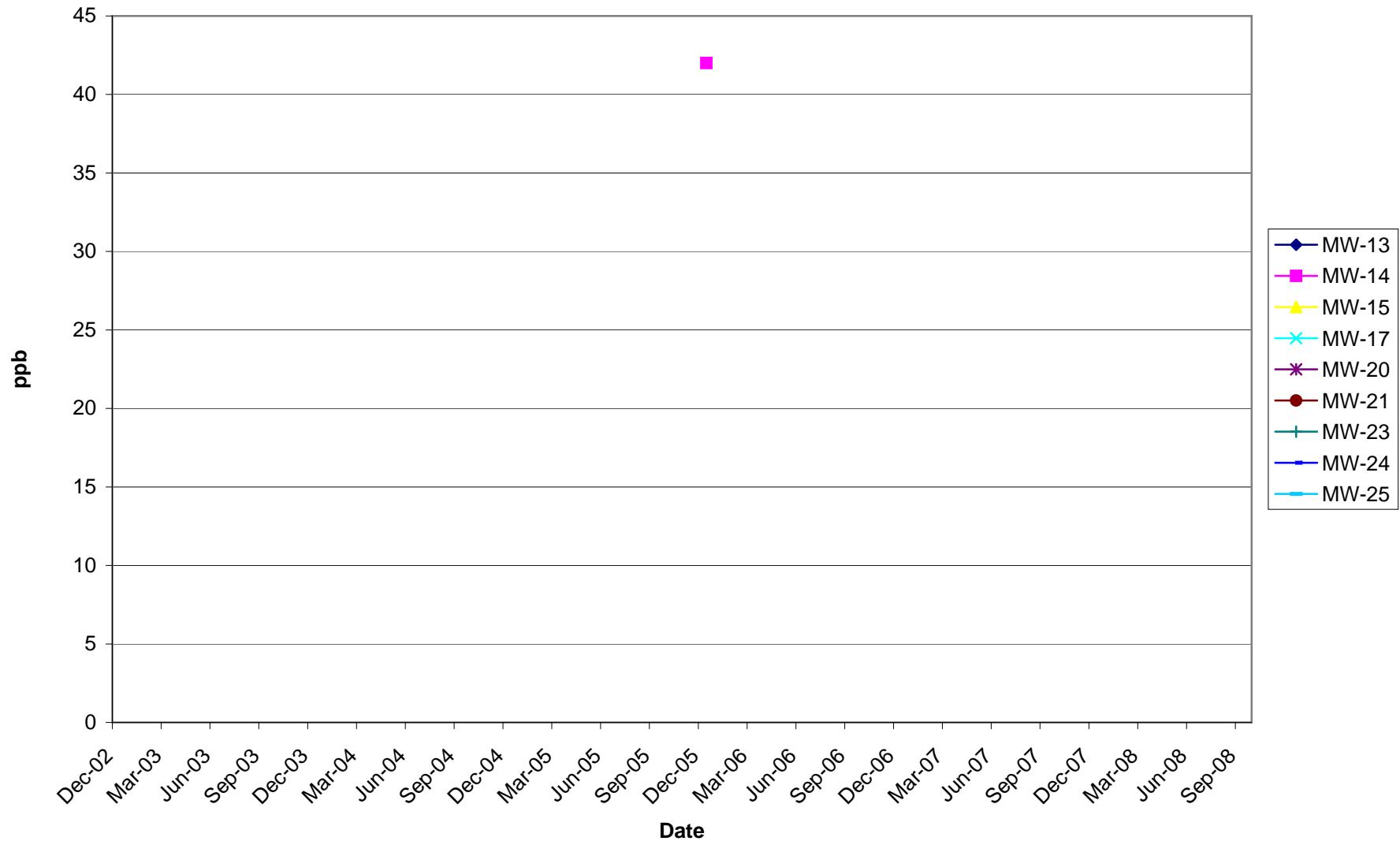
### Dissolved 1,1-DCE in A1 Wells



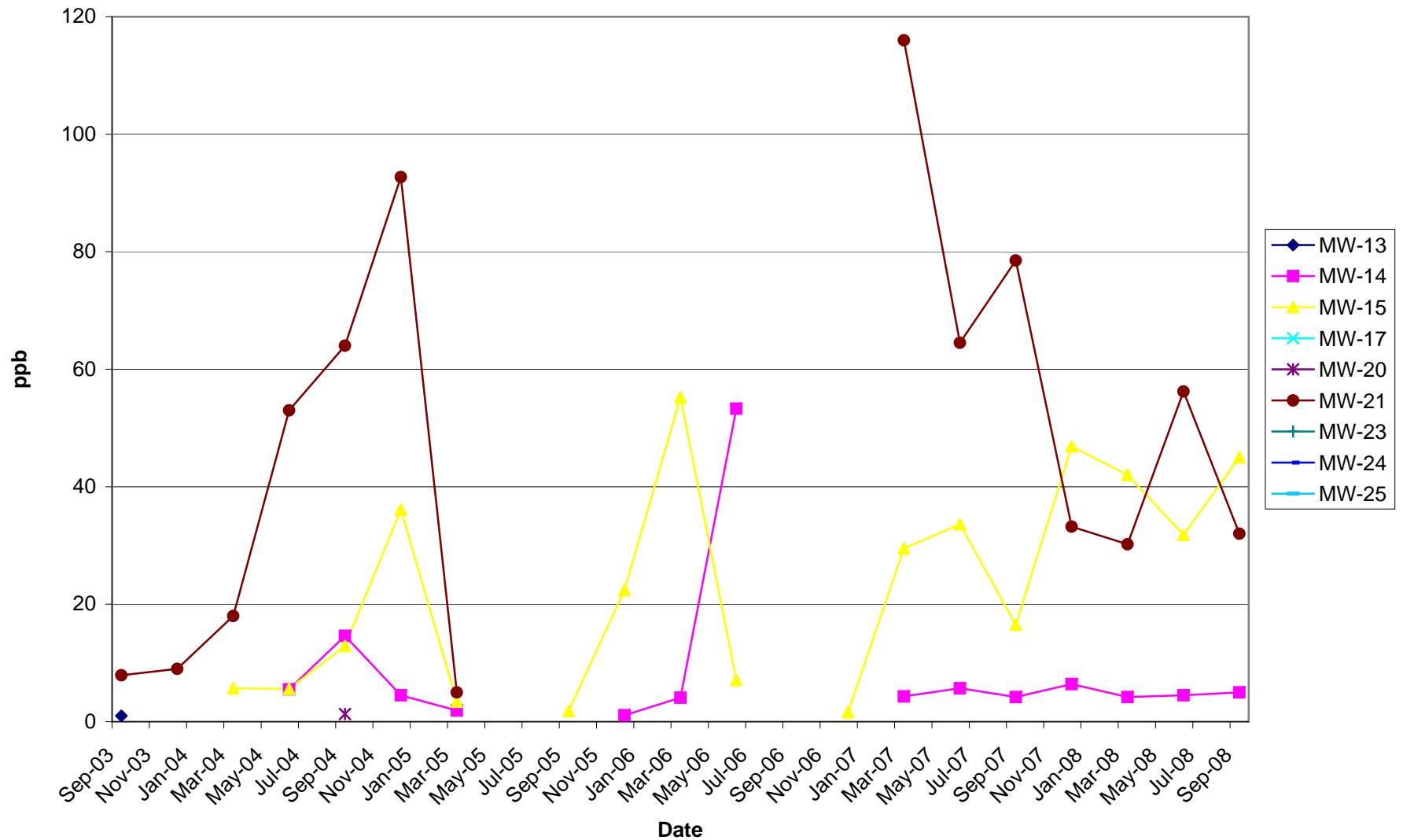
### Dissolved 1,4-Dioxane in A1 Wells



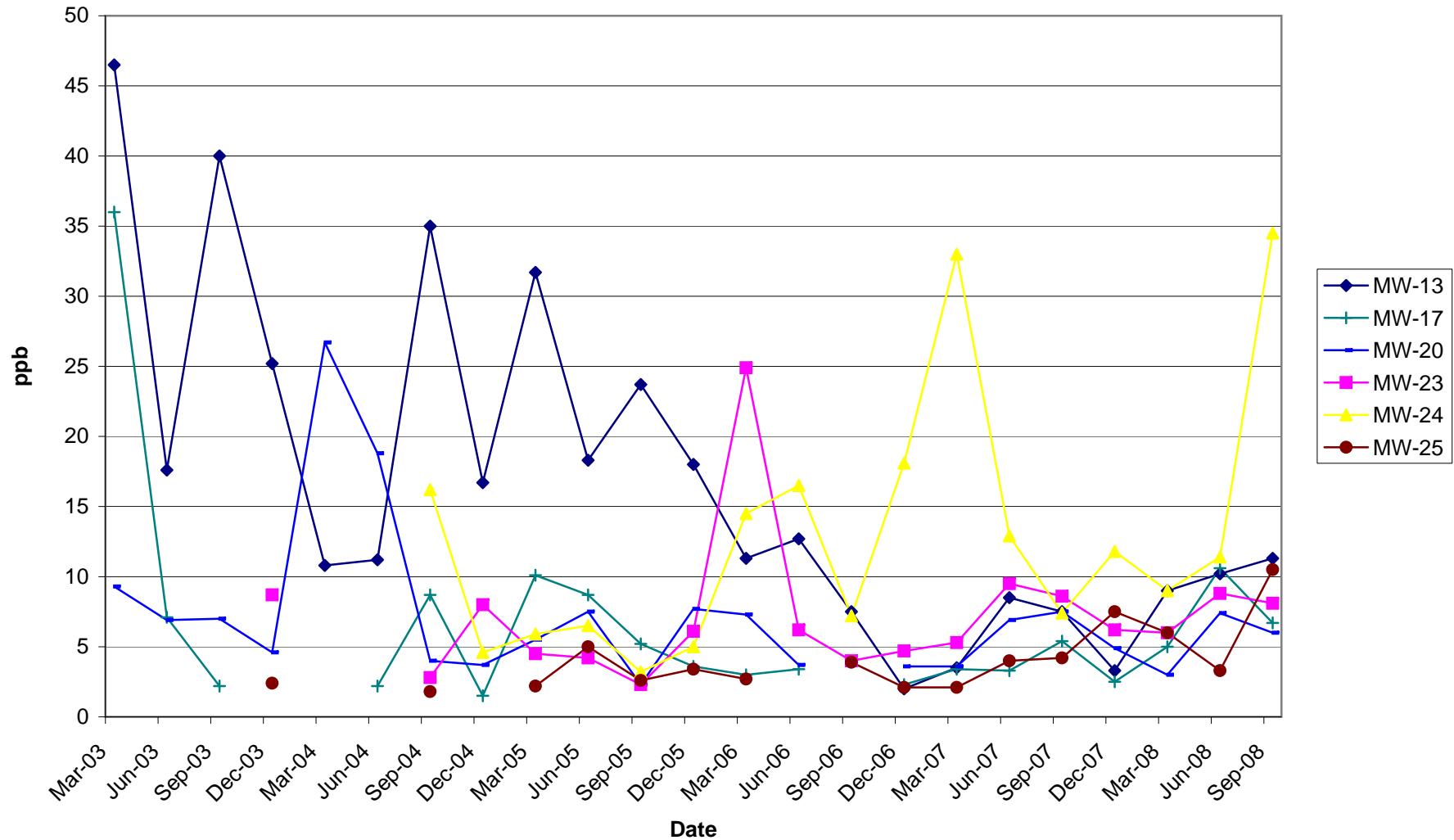
### Dissolved Acetone in A1 Wells



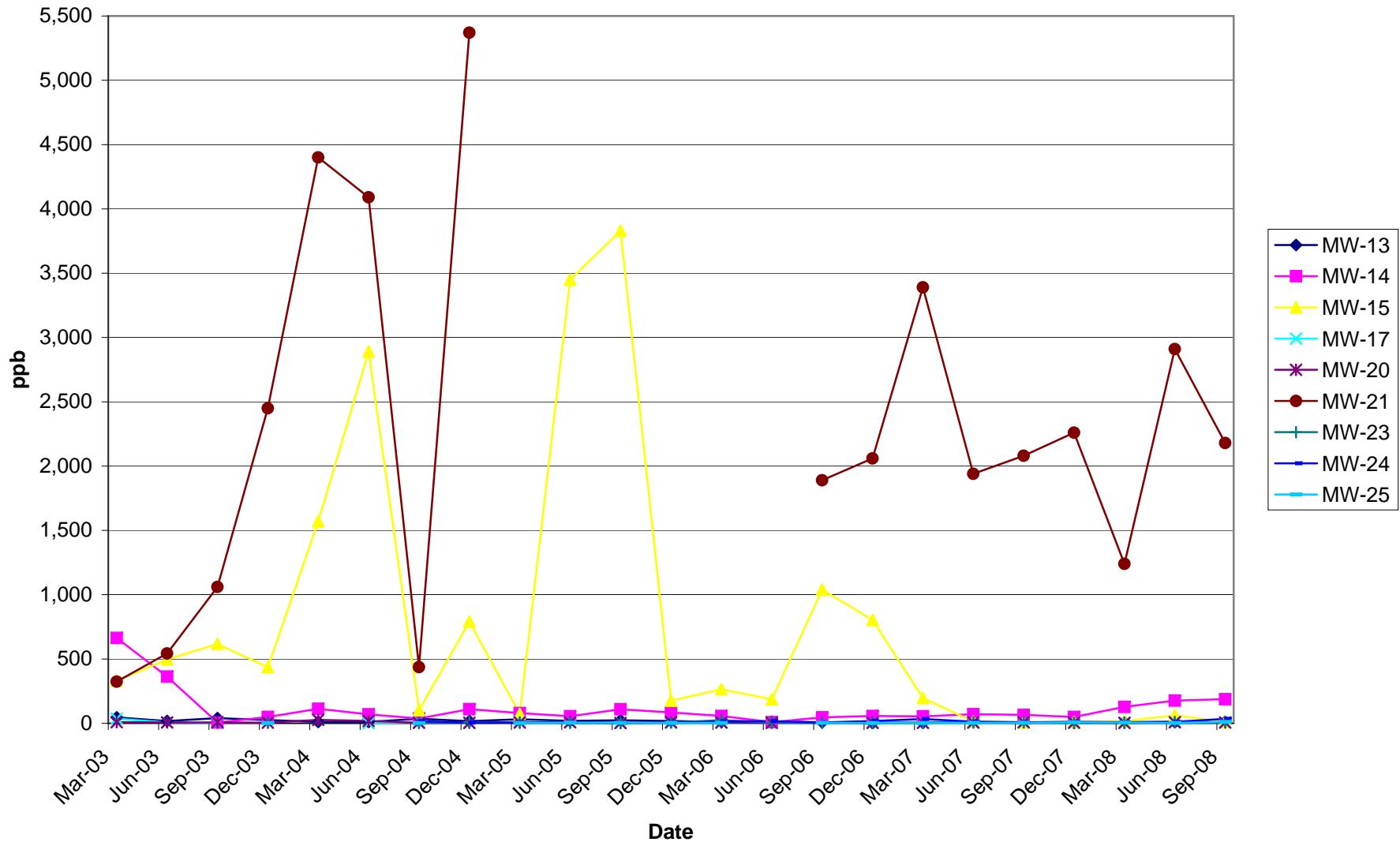
### Dissolved Benzene in A1 Wells



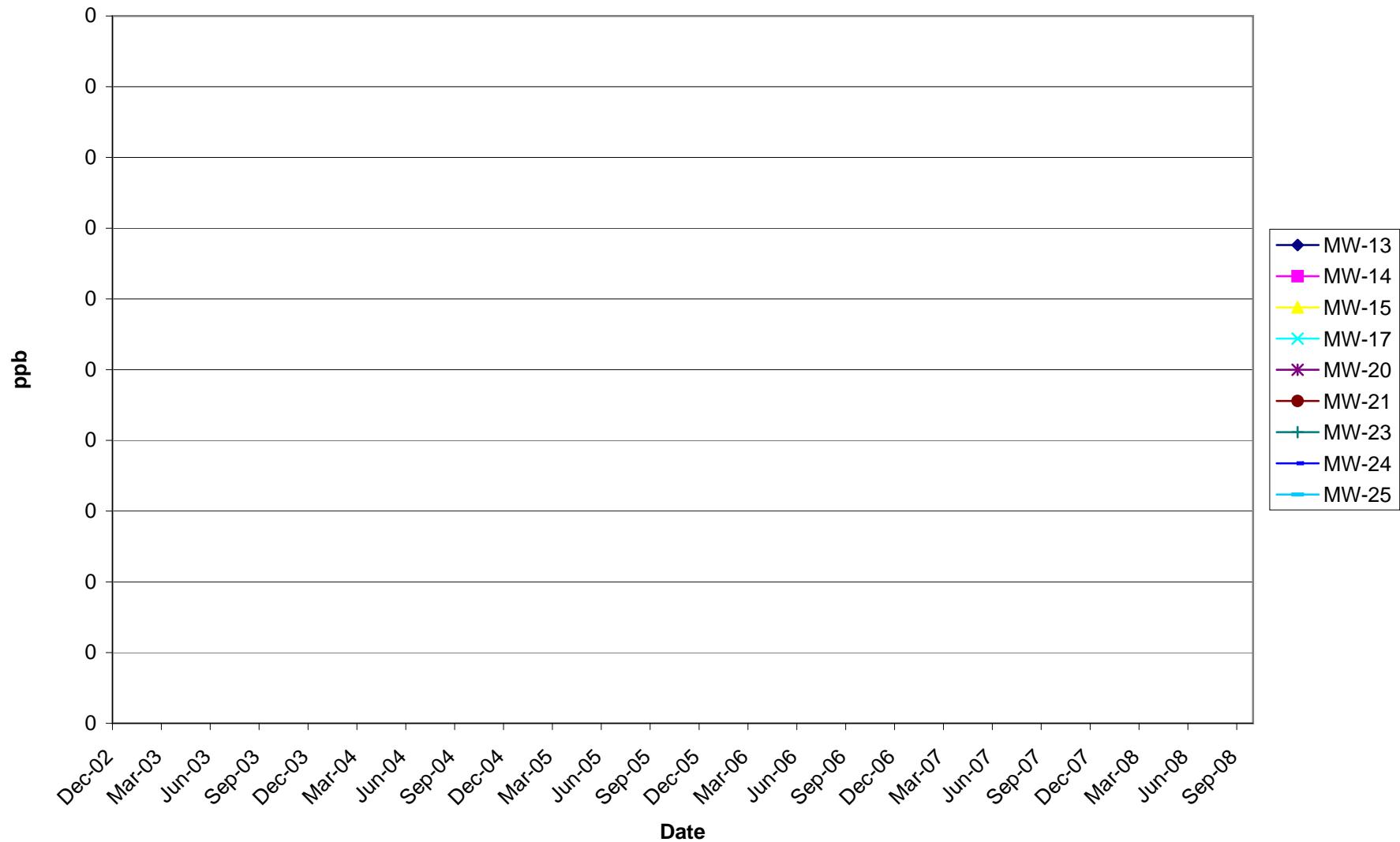
**Dissolved Cis-1,2-DCE in A1 Wells**  
**(excluding MW-14, MW-15 and MW-21 for smaller scale)**



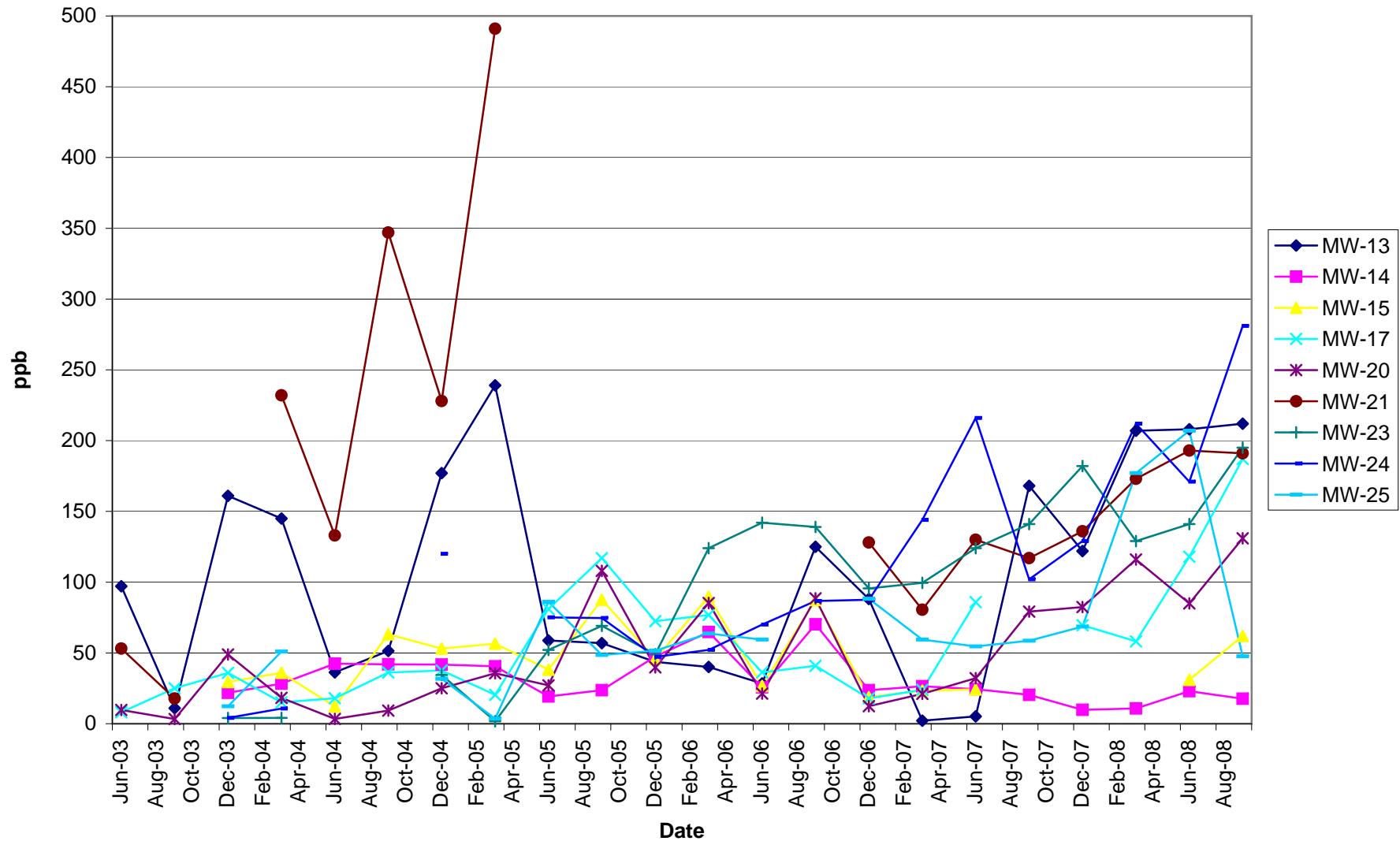
### Dissolved Cis-1,2-DCE in A1 Wells



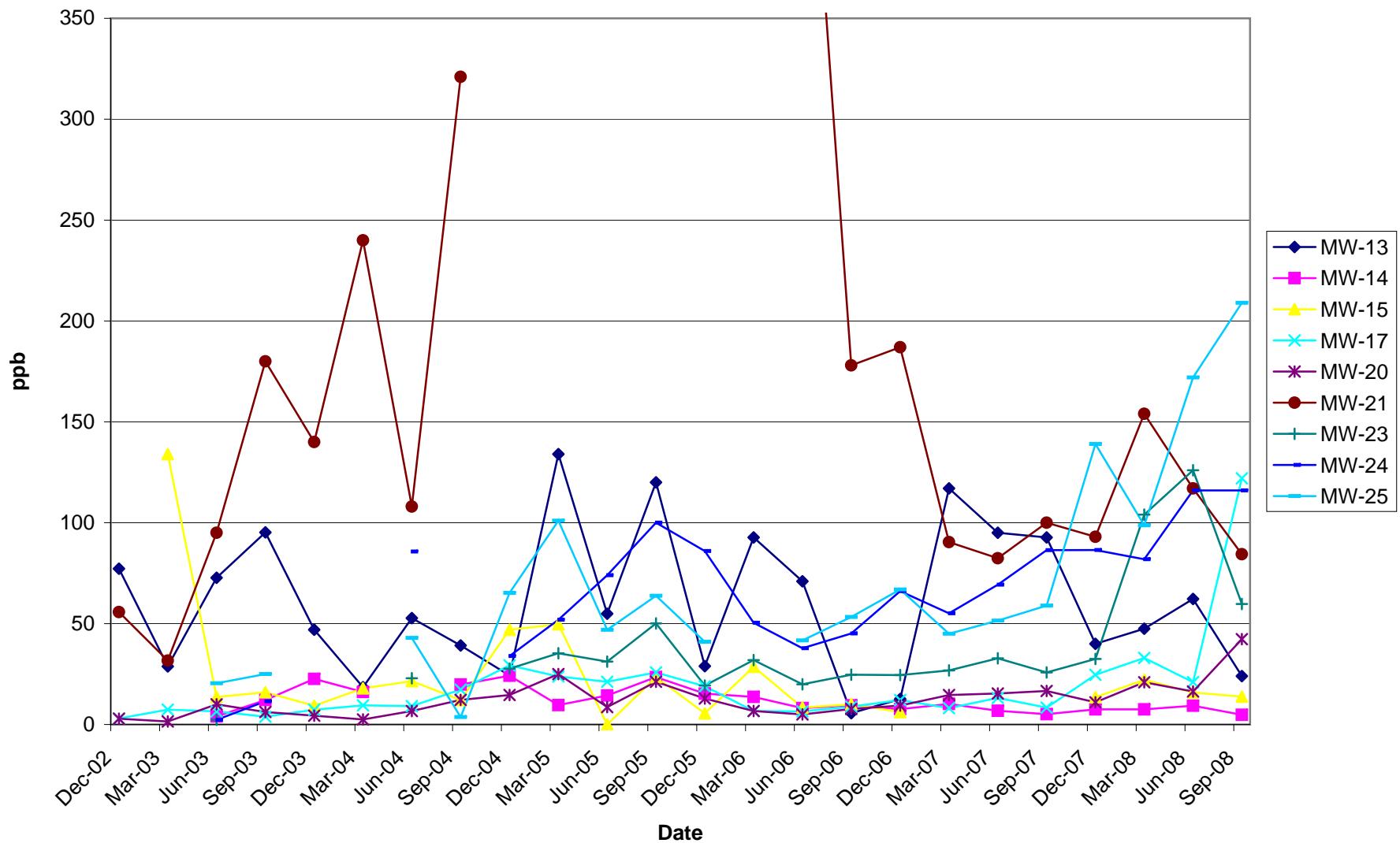
## Dissolved MEK in A1 Wells



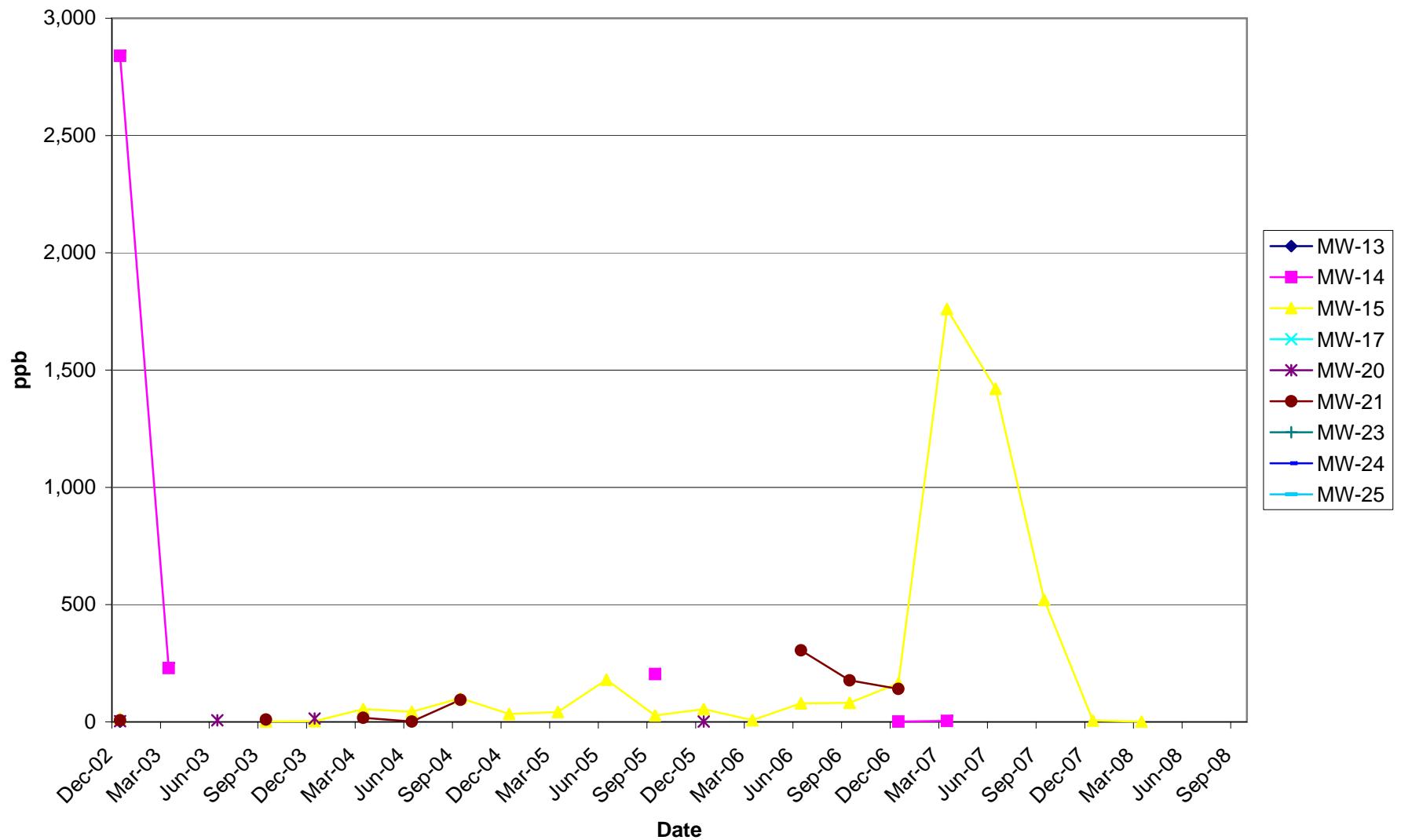
### Dissolved PCE in A1 Wells



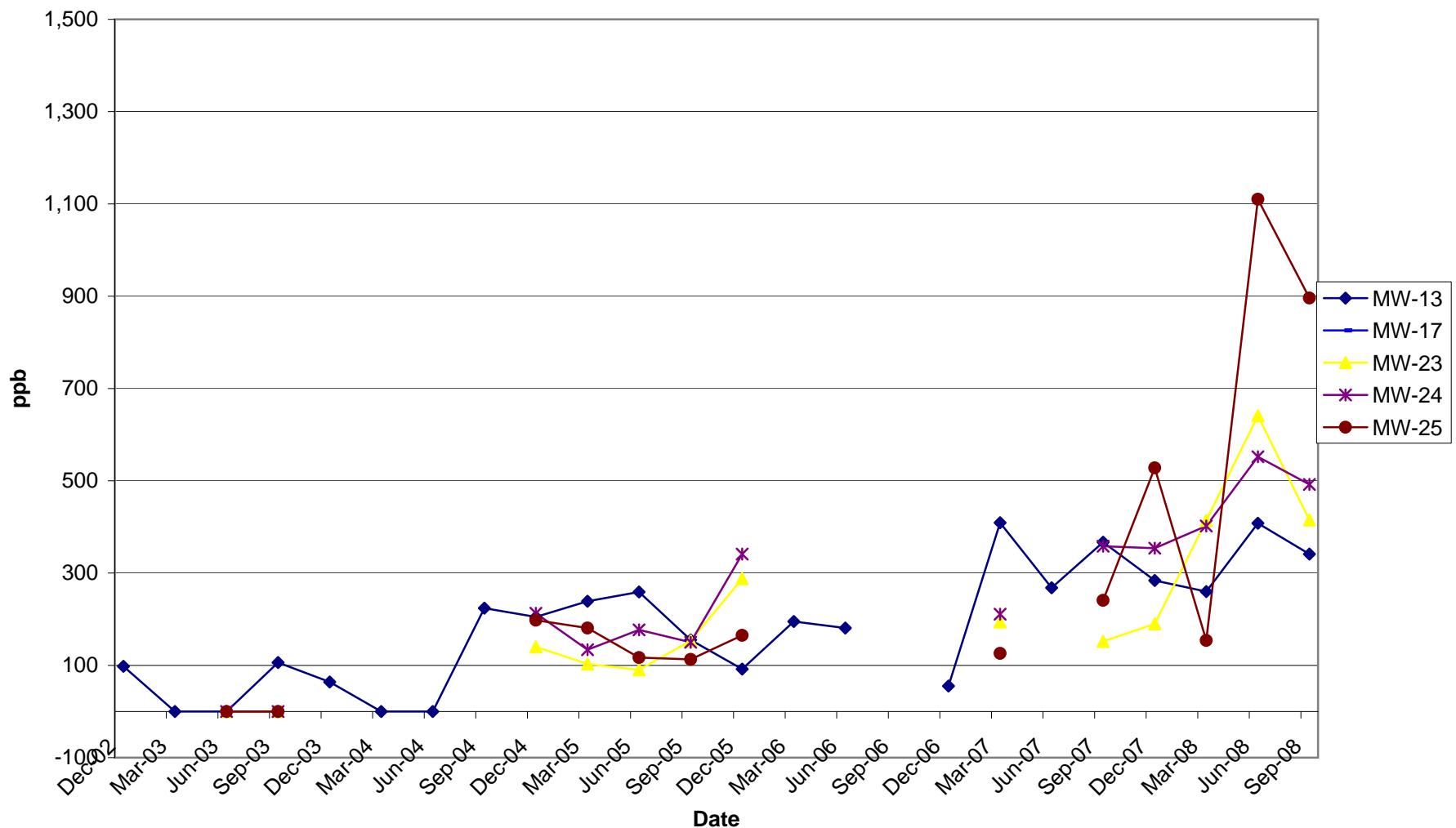
### Dissolved TCE in A1 Wells



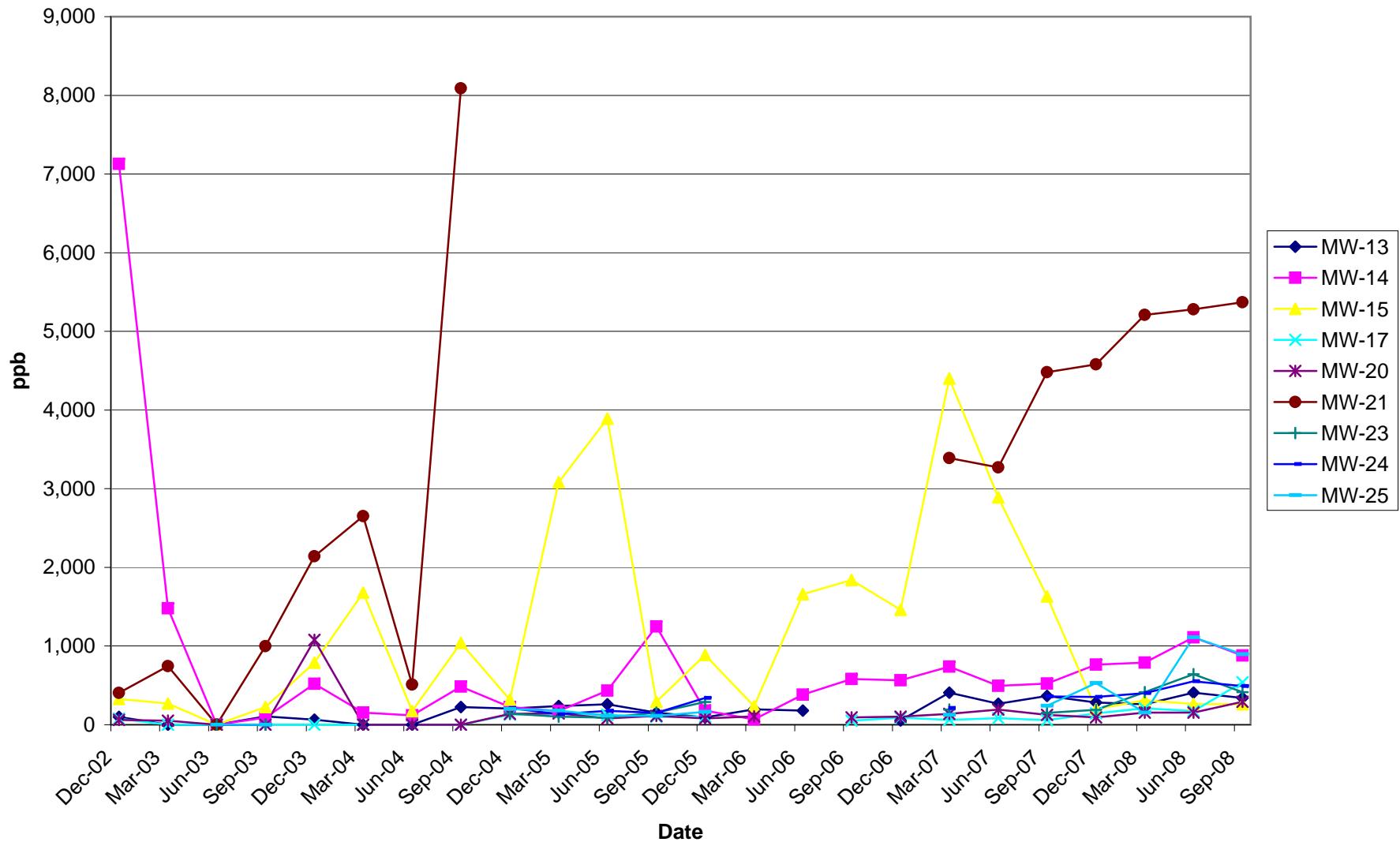
## Dissolved Toluene in A1 Wells



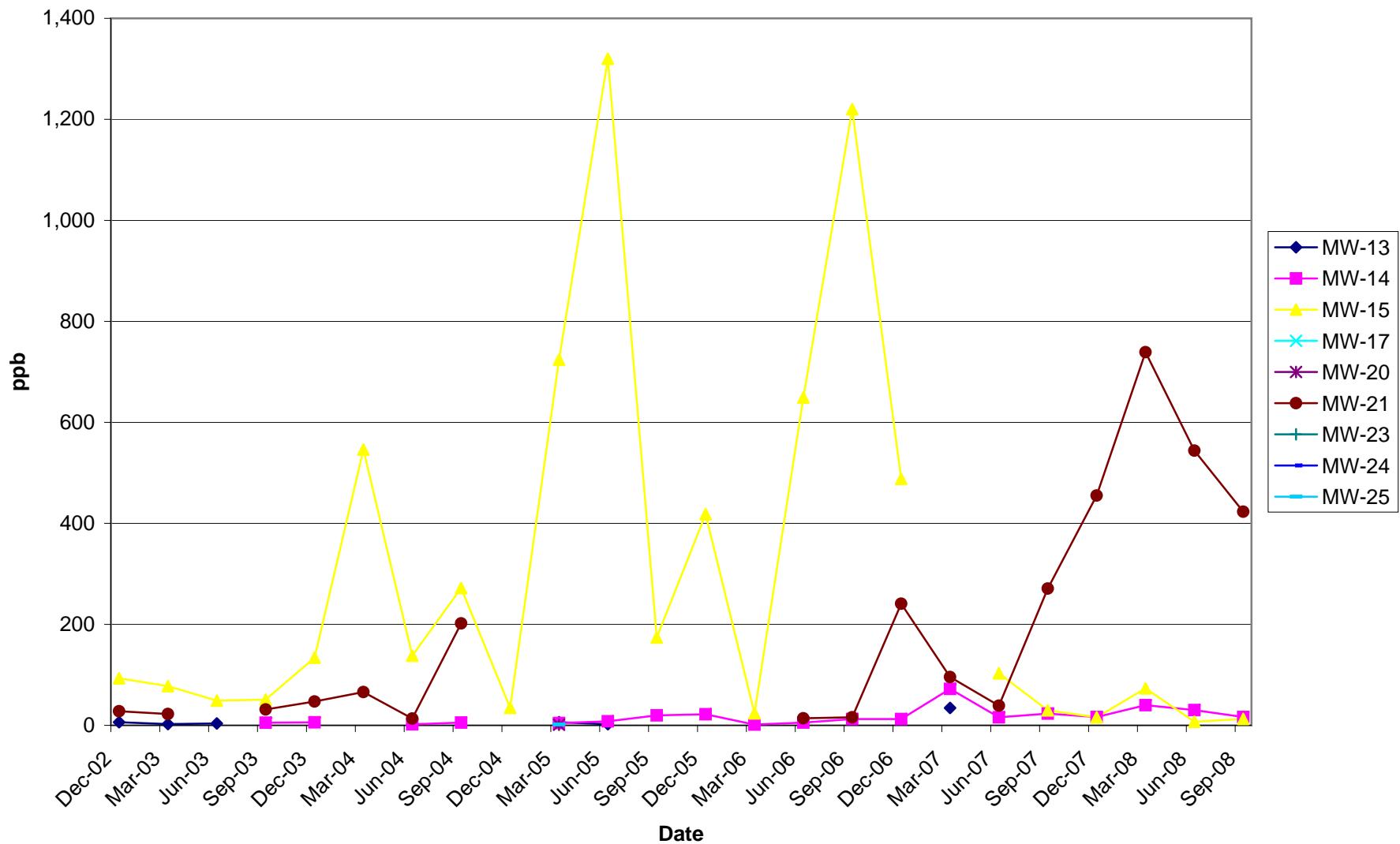
**Dissolved TPH-gas in A1 Wells**  
**(excluding MW-14, MW-15, MW-20 and MW-21 for smaller scale)**



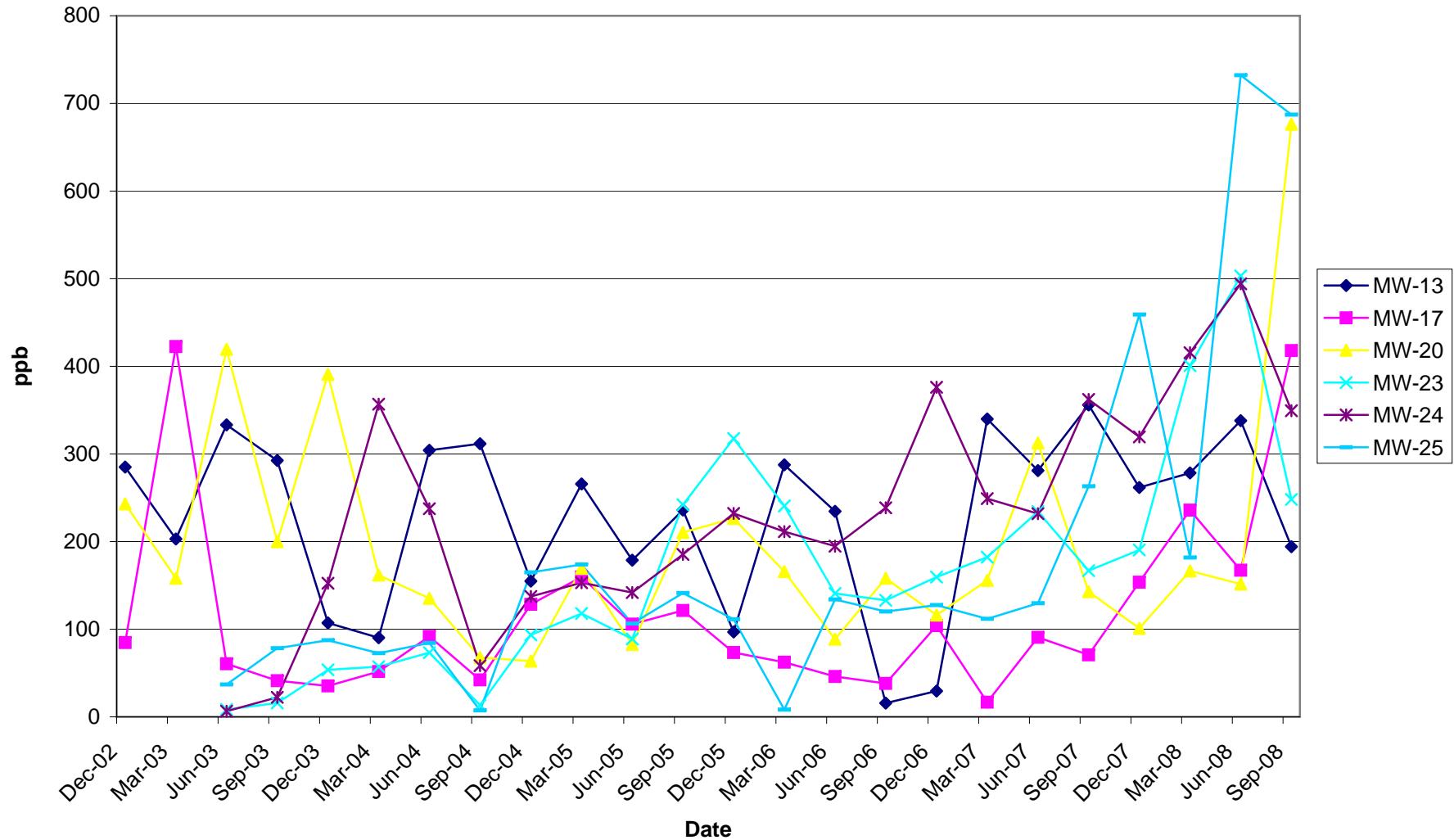
## Dissolved TPH-gas in A1 Wells



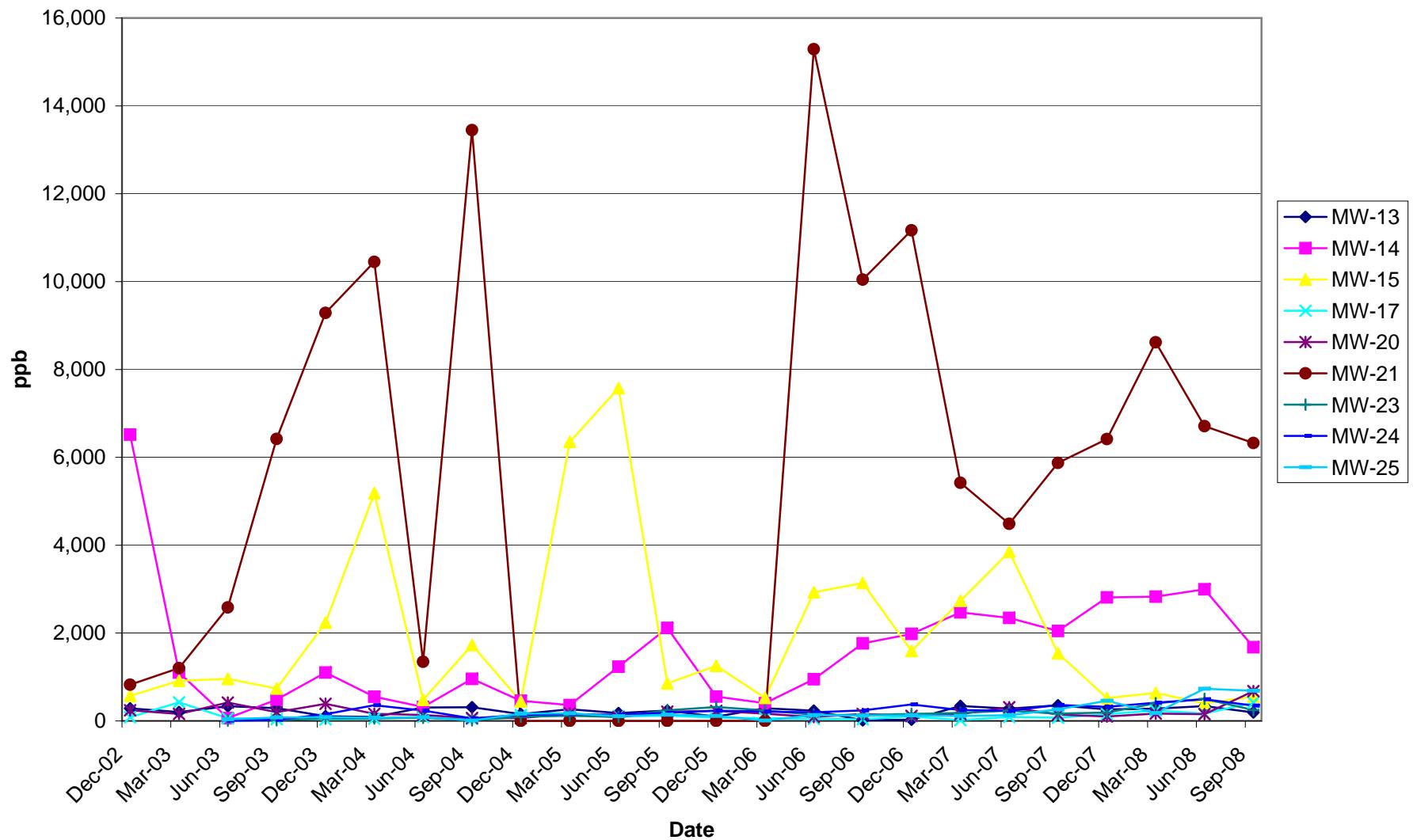
### Dissolved Vinyl Chloride in A1 Wells



**Total Dissolved VOCs in A1 Wells**  
**(excluding MW-14, MW-15 and MW-21 for smaller scale)**



### Total Dissolved VOCs in A1 Wells



**APPENDIX C**

**GROUNDWATER LABORATORY**

**ANALYSIS REPORTS**



# Alpha Scientific Corporation

## Environmental Laboratories

09-29-2008

Mr. Joseph Kennedy  
Greve Financial  
PO Box 1684  
Lomita, CA 90717

Project: Angeles Chemical Co./FACC  
Project Site: 8915 Sorensen Ave., Santa Fe Springs, CA  
Sample Date: 09-18-2008  
Lab Job No.: GF809093

Dear Mr. Kennedy:

Enclosed please find the analytical report for the sample(s) received by Alpha Scientific Corporation on 09-18-2008 and analyzed for the following parameters:

TPH-Gasoline  
EPA 8260B (VOCs by GC/MS)

All analyses have met the QA/QC criteria of this laboratory.

The sample(s) arrived in good conditions (i.e., chilled, intact) and with a chain of custody record attached.

Alpha Scientific Corporation is certified by CA DHS (Certificate Number 2633). Thank you for giving us the opportunity to serve you. Please feel free to call me at (562) 809-8880 if our Laboratory can be of further service to you.

Sincerely,

Roger Wang, Ph. D.  
Laboratory Director

Enclosures

This cover letter is an integral part of this analytical report.



# Alpha Scientific Corporation

## Environmental Laboratories

09-29-2008

Client: Greve Financial Lab Job No.: GF809093  
Project: Angeles Chemical Co./FACC  
Project Site: 8915 Sorensen Ave., Santa Fe Springs, CA Date Sampled: 09-18-2008  
Matrix: Water Date Received: 09-18-2008  
Batch No.: EMI23-GW1 Date Analyzed: 09-23-2008

**TPH-Gasoline by LUFT GC/MS**  
Reporting Unit:  $\mu\text{g/L}$  (ppb)

Sample ID	Lab ID	C4-C12 (Gasoline Range)	Method Detection Limit	PQL
Method Blank		ND	50	50
MW-8	GF809093-1	13,100	50	50
MW-9	GF809093-2	3,420	50	50
MW-10	GF809093-3	22,100	50	50
MW-10 Dup	GF809093-4	23,800	50	50
MW-11	GF809093-5	22,400	50	50
MW-12	GF809093-6	386	50	50
MW-13	GF809093-7	341	50	50
MW-14	GF809093-8	881	50	50
MW-15	GF809093-9	259	50	50
MW-16	GF809093-10	9,910	50	50
MW-17	GF809093-11	539	50	50
MW-20	GF809093-12	291	50	50
MW-21	GF809093-13	5,370	50	50
MW-23	GF809093-14	415	50	50
MW-24	GF809093-15	492	50	50
MW-25	GF809093-16	896	50	50
Trip Blank	GF809093-17	ND	50	50

PQL: Practical Quantitation Limit.



# Alpha Scientific Corporation

## Environmental Laboratories

Client: Greve Financial  
Project: Angeles Chemical Co./FACC

Lab Job No.: GF809093  
Matrix: Water

Date Reported: 09-29-2008  
Date Sampled: 09-18-2008

### EPA 8260B (VOCs by GC/MS, Page 1 of 2)

Reporting Unit: ppb

DATE ANALYZED		09-23	09-23-08	09-23-08	09-23-08	09-23-08	09-23-08	09-23-08
DILUTION FACTOR			100	10	25	25	100	1
LAB SAMPLE I.D.			GF809093-1	GF809093-2	GF809093-3	GF809093-4	GF809093-5	GF809093-6
CLIENT SAMPLE I.D.			MW-8	MW-9	MW-10	MW-10 Dup	MW-11	MW-12
COMPOUND	MDL	PQL	MB					
Dichlorodifluoromethane	2	5	ND	ND	ND	ND	ND	ND
Chloromethane	2	5	ND	ND	ND	ND	ND	ND
Vinyl Chloride	1	2	ND	72.0J	195	48.0	64.3	454
Bromomethane	2	5	ND	ND	ND	ND	ND	ND
Chloroethane	2	5	ND	ND	ND	520	548	8,670
Trichlorofluoromethane	2	5	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	2	5	ND	ND	970	ND	ND	ND
Iodomethane	2	5	ND	ND	ND	ND	ND	ND
Methylene Chloride	2	5	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	2	5	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	1	2	ND	6,130	1,140	304	306	4,950
2,2-Dichloropropane	2	5	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	2	5	ND	ND	496	46.5J	45.5J	205J
Bromochloromethane	2	5	ND	ND	ND	ND	ND	ND
Chloroform	2	5	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	2	5	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	2	5	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	2	5	ND	ND	ND	ND	ND	ND
1,1-Dichloropropene	2	5	ND	ND	ND	ND	ND	ND
Benzene	1	1	ND	55.0J	25.0	25.0	24.5J	207
Trichloroethene	2	2	ND	ND	45.3	ND	ND	ND
1,2-Dichloropropane	2	5	ND	ND	ND	ND	ND	ND
Bromodichloromethane	2	5	ND	ND	ND	ND	ND	ND
Dibromomethane	2	5	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	2	5	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	2	5	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	2	5	ND	ND	ND	ND	ND	ND
1,3-Dichloropropane	2	5	ND	ND	ND	ND	ND	ND
Dibromochloromethane	2	5	ND	ND	ND	ND	ND	ND
2-Chloroethylvinyl ether	2	5	ND	ND	ND	ND	ND	ND
Bromoform	2	5	ND	ND	ND	ND	ND	ND
Isopropylbenzene	2	5	ND	ND	ND	32.0J	33.5J	74.0J
Bromobenzene	2	5	ND	ND	ND	ND	ND	ND



**Alpha Scientific Corporation**  
Environmental Laboratories

Client: Greve Financial

Project: Angeles Chemical Co./FACC

Lab Job No.: GF809093

Matrix: Water

Date Reported: 09-29-2008

Date Sampled: 09-18-2008

**EPA 8260B (VOCs by GC/MS, Page 2 of 2)**

Reporting Unit: (ppb)

COMPOUND	MDL	PQL	MB	MW-8	MW-9	MW-10	MW-10 Dup	MW-11	MW-12
Toluene	1	1	ND	ND	ND	7,040*	7,180*	5,240	ND
Tetrachloroethene	2	2	ND	ND	108	ND	ND	ND	1.6J
1,2-Dibromoethane(EDB)	2	5	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	2	5	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	2	5	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	1	1	ND	687	ND	752	871	864	ND
Total Xylenes	2	2	ND	947	ND	3,930	3,970	2,120	1.3J
Styrene	2	5	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	2	5	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	2	5	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	2	5	ND	132J	ND	927	894	140J	ND
2-Chlorotoluene	2	5	ND	ND	ND	ND	ND	ND	ND
4-Chlorotoluene	2	5	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	2	5	ND	328J	ND	340	377	469J	ND
tert-Butylbenzene	2	5	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	2	5	ND	1,100	ND	1,500	1,560	1,560	2.2J
Sec-Butylbenzene	2	5	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	2	5	ND	ND	ND	ND	ND	ND	ND
p-Isopropyltoluene	2	5	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	2	5	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	2	5	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	2	5	ND	1,390	ND	ND	ND	ND	2.0J
1,2,4-Trichlorobenzene	2	5	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromo-3-Chloropropane	2	5	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	2	5	ND	ND	ND	ND	ND	ND	ND
Naphthalene	2	5	ND	1,160	ND	297	267	81.0J	9.8
1,2,3-Trichlorobenzene	2	5	ND	ND	ND	ND	ND	ND	ND
Acetone	5	25	ND	ND	ND	ND	ND	ND	ND
2-Butanone (MEK)	5	25	ND	ND	ND	ND	ND	ND	ND
Carbon disulfide	5	25	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-pentanone	5	25	ND	ND	ND	ND	ND	ND	ND
2-Hexanone	5	25	ND	ND	ND	ND	ND	ND	ND
Vinyl Acetate	5	25	ND	ND	ND	ND	ND	ND	ND
1,4-Dioxane	50	100	ND	ND	13,400	ND	ND	ND	ND
MTBE	2	2	ND	ND	ND	ND	ND	ND	ND
ETBE	2	2	ND	ND	ND	ND	ND	ND	ND
DIPE	2	2	ND	ND	ND	ND	ND	ND	ND
TAME	2	2	ND	ND	ND	ND	ND	ND	ND
T-Butyl Alcohol	10	10	ND	ND	ND	ND	ND	ND	ND

\*: Obtained from a higher dilution analysis L : Obtained from a lower dilution analysis.

MDL=Method Detection Limit; PQL=Practical Quantitation Limit; MB=Method Blank; ND=Not Detected (below DF ×MDL),  
j=trace concentration.



# Alpha Scientific Corporation

## Environmental Laboratories

Client: Greve Financial  
Project: Angeles Chemical Co./FACC

Lab Job No.: GF809093  
Matrix: Water

Date Reported: 09-29-2008  
Date Sampled: 09-18-2008

### EPA 8260B (VOCs by GC/MS, Page 1 of 2)

Reporting Unit: ppb

DATE ANALYZED			09-23	09-23-08	09-23-08	09-23-08	09-23-08	09-23-08	09-23-08
DILUTION FACTOR			1	1	5	1	50	1	1
LAB SAMPLE I.D.				GF809093 -7	GF809093 -8	GF809093 -9	GF809093 -10	GF809093 -11	GF809093 -12
CLIENT SAMPLE I.D.				MW-13	MW-14	MW-15	MW-16	MW-17	MW-20
COMPOUND	MDL	PQL	MB						
Dichlorodifluoromethane	2	5	ND	ND	ND	ND	ND	ND	ND
Chloromethane	2	5	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	1	2	ND	ND	16.4	12.8	392	ND	ND
Bromomethane	2	5	ND	ND	ND	ND	ND	ND	ND
Chloroethane	2	5	ND	ND	ND	86.1	ND	ND	ND
Trichlorofluoromethane	2	5	ND	1.3J	ND	1.0J	ND	35.2	6.8
1,1-Dichloroethene	2	5	ND	4.9J	443	9.0	1,770	92.3	442.3
Iodomethane	2	5	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	2	5	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	2	5	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	1	2	ND	ND	258	82.0	2,590	ND	5.2
2,2-Dichloropropane	2	5	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	2	5	ND	6.3	73.1	9.1	3,600	6.4	8.6
Bromochloromethane	2	5	ND	ND	ND	ND	ND	ND	ND
Chloroform	2	5	ND	1.1J	ND	1.2J	ND	26.6	4.6J
1,2-Dichloroethane	2	5	ND	ND	3.5J	ND	ND	2.2J	ND
1,1,1-Trichloroethane	2	5	ND	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	2	5	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloropropene	2	5	ND	ND	ND	ND	ND	ND	ND
Benzene	1	1	ND	ND	4.3J	14.2	37.5J	ND	ND
Trichloroethene	2	2	ND	24.0	4.8J	13.8	327	122	42.3
1,2-Dichloropropane	2	5	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	2	5	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	2	5	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	2	5	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	2	5	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	2	5	ND	ND	ND	ND	ND	ND	ND
1,3-Dichloropropane	2	5	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	2	5	ND	ND	ND	ND	ND	ND	ND
2-Chloroethylvinyl ether	2	5	ND	ND	ND	ND	ND	ND	ND
Bromoform	2	5	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	2	5	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	2	5	ND	ND	ND	ND	ND	ND	ND



**Alpha Scientific Corporation**  
Environmental Laboratories

Client: Greve Financial  
Project: Angeles Chemical Co./FACC

Lab Job No.: GF809093  
Matrix: Water

Date Reported: 09-29-2008  
Date Sampled: 09-18-2008

**EPA 8260B (VOCs by GC/MS, Page 2 of 2)**

Reporting Unit: (ppb)

COMPOUND	MDL	PQL	MB	MW-13	MW-14	MW-15	MW-16	MW-17	MW-20
Toluene	1	1	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	2	2	ND	159	11.4	51.6	121	195*	178
1,2-Dibromoethane(EDB)	2	5	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	2	5	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	2	5	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	1	1	ND	ND	ND	ND	44.0J	ND	ND
Total Xylenes	2	2	ND	ND	ND	ND	ND	ND	ND
Styrene	2	5	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	2	5	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloroproppane	2	5	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	2	5	ND	ND	ND	ND	ND	ND	ND
2-Chlorotoluene	2	5	ND	ND	ND	ND	ND	ND	ND
4-Chlorotoluene	2	5	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	2	5	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	2	5	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	2	5	ND	ND	ND	ND	138J	ND	ND
Sec-Butylbenzene	2	5	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	2	5	ND	ND	ND	ND	ND	ND	ND
p-Isopropyltoluene	2	5	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	2	5	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	2	5	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	2	5	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	2	5	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromo-3-Chloropropane	2	5	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	2	5	ND	ND	ND	ND	ND	ND	ND
Naphthalene	2	5	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	2	5	ND	ND	ND	ND	ND	ND	ND
Acetone	5	25	ND	ND	ND	ND	ND	ND	ND
2-Butanone (MEK)	5	25	ND	ND	ND	ND	ND	ND	ND
Carbon disulfide	5	25	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-pentanone	5	25	ND	ND	ND	ND	ND	ND	ND
2-Hexanone	5	25	ND	ND	ND	ND	ND	ND	ND
Vinyl Acetate	5	25	ND	ND	ND	ND	ND	ND	ND
1,4-Dioxane	50	100	ND	ND	866	273	7,690	ND	ND
MTBE	2	2	ND	ND	ND	ND	ND	ND	ND
ETBE	2	2	ND	ND	ND	ND	ND	ND	ND
DIPE	2	2	ND	ND	ND	ND	ND	ND	ND
TAME	2	2	ND	ND	ND	ND	ND	ND	ND
T-Butyl Alcohol	10	10	ND	ND	ND	ND	ND	ND	ND

\* : Obtained from a higher dilution analysis L : Obtained from a lower dilution analysis.

MDL=Method Detection Limit; PQL=Practical Quantitation Limit; MB=Method Blank; ND=Not Detected (below DF ×MDL), j=trace concentration.



# Alpha Scientific Corporation

## Environmental Laboratories

Client: Greve Financial  
Project: Angeles Chemical Co./FACC

Lab Job No.: GF809093  
Matrix: Water

Date Reported: 09-29-2008  
Date Sampled: 09-18-2008

### EPA 8260B (VOCs by GC/MS, Page 1 of 2)

Reporting Unit: ppb

DATE ANALYZED		09-23	09-23-08	09-23-08	09-23-08	09-23-08	09-23-08	
DILUTION FACTOR			20	2	2	2	1	
LAB SAMPLE I.D.			GF809093-13	GF809093-14	GF809093-15	GF809093-16	GF809093-17	
CLIENT SAMPLE I.D.			MW-21	MW-23	MW-24	MW-25	Trip Blank	
COMPOUND	MDL	PQL	MB					
Dichlorodifluoromethane	2	5	ND	ND	ND	ND	ND	ND
Chloromethane	2	5	ND	ND	ND	ND	ND	ND
Vinyl Chloride	1	2	ND	423	ND	ND	ND	ND
Bromomethane	2	5	ND	ND	ND	ND	ND	ND
Chloroethane	2	5	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	2	5	ND	ND	17.9	24.0	63.8	ND
1,1-Dichloroethene	2	5	ND	778	47.8	60.1	159	ND
Iodomethane	2	5	ND	ND	ND	ND	ND	ND
Methylene Chloride	2	5	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	2	5	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	1	2	ND	3,660	ND	ND	2.5J	ND
2,2-Dichloropropane	2	5	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	2	5	ND	1,150	4.7J	7.2J	12.5	ND
Bromochloromethane	2	5	ND	ND	ND	ND	ND	ND
Chloroform	2	5	ND	ND	12.3	12.3	37.1	4.5J
1,2-Dichloroethane	2	5	ND	ND	ND	ND	3.2J	ND
1,1,1-Trichloroethane	2	5	ND	36.0J	ND	ND	ND	ND
Carbon tetrachloride	2	5	ND	ND	ND	ND	ND	ND
1,1-Dichloropropene	2	5	ND	ND	ND	ND	ND	ND
Benzene	1	1	ND	26.0	ND	ND	ND	ND
Trichloroethene	2	2	ND	84.4	59.7	116	209	ND
1,2-Dichloropropane	2	5	ND	ND	ND	ND	ND	ND
Bromodichloromethane	2	5	ND	ND	ND	ND	ND	5.7
Dibromomethane	2	5	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	2	5	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	2	5	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	2	5	ND	ND	ND	ND	ND	ND
1,3-Dichloropropane	2	5	ND	ND	ND	ND	ND	ND
Dibromochloromethane	2	5	ND	ND	ND	ND	ND	5.5
2-Chloroethylvinyl ether	2	5	ND	ND	ND	ND	ND	ND
Bromoform	2	5	ND	ND	ND	ND	ND	ND
Isopropylbenzene	2	5	ND	ND	ND	ND	ND	ND
Bromobenzene	2	5	ND	ND	ND	ND	ND	ND



**Alpha Scientific Corporation**  
Environmental Laboratories

Client: Greve Financial  
Project: Angeles Chemical Co./FACC

Lab Job No.: GF809093  
Matrix: Water

Date Reported: 09-29-2008  
Date Sampled: 09-18-2008

**EPA 8260B (VOCs by GC/MS, Page 2 of 2)**  
Reporting Unit: (ppb)

COMPOUND	MDL	PQL	MB	MW-21	MW-23	MW-24	MW-25	Trip Blank
Toluene	1	1	ND	ND	ND	ND	ND	ND
Tetrachloroethene	2	2	ND	132	136	166	301	ND
1,2-Dibromoethane(EDB)	2	5	ND	ND	ND	ND	ND	ND
Chlorobenzene	2	5	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	2	5	ND	ND	ND	ND	ND	ND
Ethylbenzene	1	1	ND	ND	ND	ND	ND	ND
Total Xylenes	2	2	ND	38.2J	ND	ND	ND	ND
Styrene	2	5	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	2	5	ND	ND	ND	ND	ND	ND
1,2,3-Trichloroproppane	2	5	ND	ND	ND	ND	ND	ND
n-Propylbenzene	2	5	ND	ND	ND	ND	ND	ND
2-Chlorotoluene	2	5	ND	ND	ND	ND	ND	ND
4-Chlorotoluene	2	5	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	2	5	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	2	5	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	2	5	ND	ND	ND	ND	ND	ND
Sec-Butylbenzene	2	5	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	2	5	ND	ND	ND	ND	ND	ND
p-Isopropyltoluene	2	5	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	2	5	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	2	5	ND	ND	ND	ND	ND	ND
n-Butylbenzene	2	5	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	2	5	ND	ND	ND	ND	ND	ND
1,2-Dibromo-3-Chloropropane	2	5	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	2	5	ND	ND	ND	ND	ND	ND
Naphthalene	2	5	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	2	5	ND	ND	ND	ND	ND	ND
Acetone	5	25	ND	ND	ND	ND	ND	ND
2-Butanone (MEK)	5	25	ND	ND	ND	ND	ND	ND
Carbon disulfide	5	25	ND	ND	ND	ND	ND	ND
4-Methyl-2-pentanone	5	25	ND	ND	ND	ND	ND	ND
2-Hexanone	5	25	ND	ND	ND	ND	ND	ND
Vinyl Acetate	5	25	ND	ND	ND	ND	ND	ND
1,4-Dioxane	50	100	ND	ND	ND	ND	ND	ND
MTBE	2	2	ND	ND	ND	ND	ND	ND
ETBE	2	2	ND	ND	ND	ND	ND	ND
DIPE	2	2	ND	ND	ND	ND	ND	ND
TAME	2	2	ND	ND	ND	ND	ND	ND
T-Butyl Alcohol	10	10	ND	ND	ND	ND	ND	ND

\* : Obtained from a higher dilution analysis L : Obtained from a lower dilution analysis.

MDL=Method Detection Limit; PQL=Practical Quantitation Limit; MB=Method Blank; ND=Not Detected (below DF ×MDL), j=trace concentration.



09-29-2008

**TPH-Gasoline  
Batch QA/QC Report**

Client:	Greve Financial	Lab Job No.:	GF809093
Project:	Angeles Chemical Co./FACC		
Matrix:	Water	Lab Sample ID:	SW80923-1
Batch No.:	EMI23-GW1	Date Analyzed:	09-23-2008

**I. MS/MSD Report  
Unit: ppb**

Analyte	Sample Conc.	Spike Conc.	MS	MSD	MS %Rec.	MSD %Rec.	% RPD	% RPD Accept. Limit	% Rec Accept. Limit
TPH-g	ND	1000	968	961	96.8	96.1	0.7	30	70-130

**II. LCS Result  
Unit: ppb**

Analyte	LCS Report Value	True Value	Rec.%	Accept. Limit
TPH-g	973	1,000	97.3	80-120

ND: Not Detected (at the specified limit).



09-29-2008

**EPA 8260B  
Batch QA/QC Report**

Client:	Greve Financial	Lab Job No.:	GF809093
Project:	Angeles Chemical Co./FACC	Lab Sample ID:	SW80923-1
Matrix:	Water	Date Analyzed:	09-23-2008
Batch No:	0923-VOEW1		

**I. MS/MSD Report**

Unit: ppb

Analyte	Sample Conc.	Spike Conc.	MS	MSD	MS %Rec.	MSD %Rec.	% RPD	%RPD Accept. Limit	%Rec Accept. Limit
1,1-Dichloroethene	ND	20	17.7	16.8	88.5	84.0	5.2	30	70-130
Benzene	ND	20	20.1	18.3	100.5	91.5	9.4	30	70-130
Trichloro-ethene	ND	20	21.1	19.0	105.5	95.0	10.5	30	70-130
Toluene	ND	20	21.6	21.0	108.0	105.0	2.8	30	70-130
Chlorobenzene	ND	20	23.1	22.3	115.5	111.5	3.5	30	70-130

**II. LCS Result**

Unit: ppb

Analyte	LCS Value	True Value	Rec.%	Accept. Limit
1,1-Dichloroethene	17.1	20.0	85.5	80-120
Benzene	17.6	20.0	88.0	80-120
Trichloro-ethene	18.1	20.0	90.5	80-120
Toluene	20.0	20.0	100.0	80-120
Chlorobenzene	21.1	20.0	105.5	80-120

ND: Not Detected (at the specified limit)



# ASSOCIATED LABORATORIES

806 N. Batavia • Orange, CA 92868  
(714) 771-6900 • Fax: (714) 538-1209

CLIENT Greve Financial Services

ADDRESS \_\_\_\_\_  
PROJECT NAME Angeles

GF 809093

## CHAIN OF CUSTODY RECORD

Date 9-18-08 Page 1 of 2

PROJECT MANAGER	Mark Sletten	Lab Use Only: <input checked="" type="checkbox"/> No <input type="checkbox"/>								
PHONE NUMBER	951-970-6955	Samples Intact Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>								
SAMPLERS: (Signature)	M Sletten/A Joe Matisch	County Seals Intact Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>								
		Sample Ambient <input checked="" type="checkbox"/> Cooled <input checked="" type="checkbox"/> Frozen <input type="checkbox"/>								
		Same Day <input checked="" type="checkbox"/> 24 Hr. <input type="checkbox"/>								
		Regular <input checked="" type="checkbox"/> 48 Hr. <input type="checkbox"/>								
SAMPLE NUMBER	LOCATION DESCRIPTION	DATE	TIME	SAMPLE TYPE	WATER	AIR	SOLID	NO OF CNTNRS	SUSP. CONTAM.	TESTS REQUIRED
MW-9	GF 809093 - 2	9-18-08	0740	X				2		8200B 8015n-gas
MW-17		11	0820					2		
MW-23		14	0840					2		
MW-16		10	0900					2		
MW-10		3	0916					1		
MW-10 DUPLICATE		4	0916					1		
MW-8		1	1027					1		
MW-20		12	1046					2		
TB	trip blank	17	0730					1		
MW-11		5	1100					2		
MW-14		8	1119					2		
MW-15		9	1152					2		
MW-25		16	1325	V				2		
Relinquished by: (Signature)	9-18-08	Received by: (Signature)	9-18-08	Date/Time	I hereby authorize the performance of the above indicated work.					
M Sletten		M Sletten	ASC	9-18-08, 3:30pm						
Relinquished by: (Signature)		Received by Laboratory for analysis: (Signature)		Date/Time						
Special Instructions:										

DISTRIBUTION: White with report. Yellow to AL,  
Pink to Courier



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(714) 771-6900 • Fax: (714) 538-1209

Greve Financial Services

CLIENT	ADDRESS	PROJECT MANAGER	M. Setten	Lab Use Only: Samples Intact Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> County Seals Intact Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Sample Ambient Cooled <input checked="" type="checkbox"/> Frozen <input type="checkbox"/> Same Day 24 Hr. <input type="checkbox"/> Regular 48 Hr. <input type="checkbox"/>			
PROJECT NAME	PHONE NUMBER	918-0813425		SAMPLER'S (Signature)			
SAMPLE NUMBER	LOCATION DESCRIPTION	DATE	TIME	SAMPLE TYPE	NO OF CNTNRS	SUSP. CONTAM.	TESTS REQUIRED
MW-24	Gf 809093-15	9-18-08	1342 X		2		8015M-925 8200 B
MW-21	13		1400		2		
MW-13	7		1420		2		
MW-12	6		1500		2		
Relinquished by: (Signature)	9-18-08	Received by: (Signature)	9-18-08	Date/Time		I hereby authorize the performance of the above indicated work.	
M. Setten	M. Setten	J. L. Asch	9-18-08	3:30 pm	Date/Time		
Relinquished by: (Signature)		Received by Laboratory for analysis: (Signature)					
Special Instructions:							

DISTRIBUTION: White with report. Yellow to AL,  
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